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ASSOCIATES

Introducing
Jasmine™
Objects @ Work

WRITING AND RE-WRITING

QuickStudy, CD-R and CD-RW technology takes the "read only" out of CD-ROM - Page 77

GETTING THE MESSAGE

If enough Wall Street firms
invest in the right way,
the market will rise.



COMPUTERWORLD THIS WEEK

FEBRUARY 8-14, 1999

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YOU SAY YOU
PLAN FOR
PEAKS, BUT
THIS IS
BEYOND
EVEREST IN
TERMS OF
PEAKS.

TIMOTHY KLEIN OF PIPER JAFFRAY,
EXPLAINING THAT SURGES IN VOLUME ARE
PARTLY TO BLAME FOR
CONSUMER COMPLAINTS ABOUT
ONLINE TRADING. SEE PAGE 4.

AT DEADLINE

AS/400s Aimed at Net

IBM is boosting its AS/400 line with new models and software options designed to make the product more attractive to both its installed base and to emerging application areas such as Web serving and enterprise resource planning. IBM says the entry-level systems will be six times as fast as its predecessor. Enhancements include the ability to consolidate multiple servers in one box.

HP Servers Enhanced

Hewlett-Packard Co. last week bolstered its high-availability fault-tolerant servers by adding centralized fault management as well as clustering over greater distances. And Microsoft Corp. has added TCP/IP load balancing to Windows NT Server 4.0 Enterprise Edition to improve its scalability. The upgrade can be found at www.microsoft.com/ntserver/ntserverenterprise/.

NDS gets Solaris

Novell Inc. has released its Novell Directory Services for Sun Microsystems Inc.'s Solaris operating system. Sun last week licensed 3Com Corp.'s NetScape technology for Paint/Plot handhelds. It's developing Java applets designed to let Solaris users easily pass information back and forth between their desktop and their handhelds.

Server Update

Microsoft Corp. is releasing Version 2.0 of its Systems Management Server, which adds monitoring and Y2K-software distribution to its hardware and software inventory and distribution functions. The server update will ship this week.

Short Takes

GENERAL MOTORS CORP. is expected to announce a \$2.3 million contract with AUTOLUM INC. in Mendota Heights, Minn., to use the vendor's InfoEngine application integration tools to link its network of dealers. . . MICROSOFT'S Hotmail, a free E-mail service, lately pulled out a patch that would prevent from forcing E-mail messages using others' IP addresses.

ONLINE STOCK COMPLAINTS SOAR

Consumers undaunted; traders beef up systems to handle growth

BY SHARON WACHLER

COMPLAINERS about electronic stock trading rose even faster than the increase in Internet trading itself last year. But that hasn't dampened consumer enthusiasm for buying and selling stocks on the Web.

Piper Jaffray Inc., a financial analysis firm in Minneapolis, estimated that daily average stock trades online rose from 150,000 at the end of 1997 to 336,000 a year later—a 124% increase.

Yet the Securities and Exchange Commission said four-quarter averages, but online stock trading rose nearly three times as fast: 330% from September 1997 to September 1998. In that period, the number of complaints about all brokers declined by 6%.

An SEC spokesman said the top three complaints are that orders are processed too slowly or not at all, that accessing accounts is difficult and that errors are made in order processing.

Interest Still High

But those problems aren't slowing overall consumer interest in trading online. Stock trades in all channels were up 6.4% in January compared with fourth-quarter averages, but online trading in January is running 25% to 50% higher than at the end of last year, according to Credit Suisse First Boston Corp.

Industry observers said capacity and customer service problems aren't surprising in an industry that has seen enormous spikes in volumes. "You say you plan for peaks, but this is beyond Everest in terms of peaks," said Timothy Klein, an analyst at Piper Jaffray.

"Everybody's service levels have been tested, especially over the last month," said Dan Hubbard, a spokesman for market leader Charles Schwab & Co. in San Francisco, which handled 64% of its customer trades on the Web

by last year's end, up from 41% in 1997.

But analysts said they believe brokers are taking needed steps to beef up offerings by boosting system capacity and customer service.

Datuck Online Holdings Corp. in Iselin, N.J., which gets high marks in the industry for prompt order handling, continues to work on making its already distributed architecture even more so, said Chief Technical Officer Peter Stern. That means running various operational pieces such as order pricing on hundreds of networked computers instead of just a few.

Datuck's peak daily order execution volume rose from 30,000 in December to 70,000 last month. The last major upgrade, in November, increased capacity fivefold, Stern said, and another major rollout slated for March should boost performance by 12 times.

Discover Brokerage, Direct Inc. in San Francisco is beefing up capacity before launching major new ad campaigns. Discover plans to expand its telephone support center 50% in the next two months. "We think we're going to need it," said Executive Vice President Tom O'Connell.

The Web trading unit of

- Beefing up system capacity
- Moving to a more distributed architecture
- Adding customer service representatives
- Making Web sites easier to navigate

Morgan Stanley Dean Witter & Co. has already built two data centers—one in California and another in Utah—that share information in real time and provide added capacity and fault tolerance, he said.

The dual data centers have been working together about three months "without a glitch," he said. ■

MORE ONLINE

For resources and articles on online trading and investing, visit our Web site: www.computerworld.com/news

Companies Turn to Web for ERP Training

'Pushing' to desktop a less-costly method

BY BARE COLE-SOMOLAKI

If it's 10 a.m., workers at Clarke American Checks Inc. are firing up their Web browsers for a collaborative training lesson on how to perform purchasing with their new SAP AG R/3 software.

During the daily sessions, end users in more than 20 locations either watch their colleagues perform simulated transactions in R/3 or do it themselves.

Clarke American, a San Antonio-based check printer, is in a growing group of companies using Web-based training to get workers up to speed on enterprise resource planning (ERP) applications. Doing so can trim up to 75% off the cost of traditional training methods, such as instructor-led sessions, users said.

"Self-paced ERP training [delivered via the Web] is becoming a popular concept," said Ellen Julies, an analyst at International Data Corp. in Framingham, Mass.

About 18% of companies deliver training via the Web,

according to the American Society for Training & Development, an industry group in Alexandria, Va. That figure is expected to rise to 53% by 2000.

Teaching IT

Most common distribution methods for corporate training



SOURCE: AMERICAN SOCIETY FOR TRAINING & DEVELOPMENT, 2-YEAR TRENDS OF THE 1990s REPORT

Users say training costs up 10% to 20% of an ERP budget and is one of the more vexing parts of an ERP project. The systems have tricky user interfaces and are highly customized, making generic, computer-based training courses ineffective.

Some ERP vendors offer training tools, but they may not cover all of the modules and often are expensive, users said. Classroom training is usually out of the question because of

the high number of users who need to be trained.

At Corning Inc. in Corning, N.Y., the biggest ERP training challenge was "the large number of users we had to train in a short period of time," said training coordinator Maureen Smith. The company has been deploying various PeopleSoft Inc. modules for two years to about 5,000 users. Corning considered delivering courses on CD-ROM, but "that was too hard to control and manage," said systems analyst Steve Ingram.

Coming's plan to train users via the corporate network failed because access was too slow for remote users. Moving to the Web with Pathlore Software Corp.'s training tool gave the trainers a central point to make course changes.

Still, using Web-based training tools means rolling out an other product in the midst of an ERP implementation. "I had to risk my neck out to do this," said Bill Magruder, Clarke American's director of SAP development. "I wanted to know who would support the [training] product and how much bandwidth it would require." ■

**"At Sony, we installed
at**

**I developed reports myself and
put them on the Web by**

How does Sony Electronics put so many great products in the hands of consumers? They use WebFOCUS to put up-to-the-minute inventory data in the hands of their managers.

WebFOCUS is a powerful, Web reporting and analysis system that can access any database and platform, so it was easy to consolidate data. And it's so productive developers were able to put new reports on their intranet in minutes.

Gary Fisher, Data Warehousing Manager at Sony Electronics says, "It gives everyone from senior executives to operational staff the answers they need when they need them."

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UNITING THE WEB
AND THE ENTERPRISE

COMPANIES FIND SILVER LINING IN Y2K

Fighting the millennium bug has helped some firms build a better business

BY JASHEEN VILAYAN

SOME COMPANIES' daring to look past Jan. 1, 2000, are finding that their costly millennium bug bills may yield long-term gains.

Giving them a chance to leverage their investments in year 2000 work are reusable testing tools, cleaner software inventories, ready workers for projects on the back burner

Year 2000 Is Good
Beneficial side effects of year 2000 work

BETTER UNDERSTANDING
of applications and their meaning to business units

REUSE of testing procedure and tools

AVAILABLE STAFF to channel into backlogged projects

and a much better understanding of their business.

Although turning resources for fixing year 2000 problems into assets isn't a new idea, user shops are only now starting to realize those benefits.

Take Trigon Blue Cross and Blue Shield in Richmond, Va. The company estimated it has spent \$22 million fixing its year 2000 problem. Not all of that money will go down the tubes once the date rolls over to Jan. 1, said Dan Clark, MIS manager at the company (dan.clark@trigon.com).

Many of the so-called "regression test beds" and massive testing procedures developed for year 2000 work can be reused — with a little modification — in projects going forward, Clark said.

For example, the company used to write new procedures to test applications each time it installed new software or upgraded old programs.

Now, Trigon needs to develop testing procedures for only the changed portion of the software because the year 2000 testing tools are reusable, Clark said.

"It will streamline our testing process significantly and save us considerable time and money every time we build a project of [upgrade] our software," Clark said.

At the Student Loan Management Association (Sallie Mae) in Reston, Va., for instance, year 2000 work already has led to a massive cleanup of its mainframe software inventory, asset manager Ronald Akosah said.

By tussling over costly software that was barely being used, the company plans to be able to save big on license and maintenance fees going forward.

Collaboration Model

"It's provided a great model for future collaborative efforts" between the information technology and business sides of the company, said Akosah, who declined to discuss Sallie

Mae's year 2000 cost.

At Phoenix Home Life Inc., in Hartford, Conn., the payroll also includes a team of IT professionals ready to be deployed in potential revenue-making roles.

In 1996, Phoenix Home set up an off-shore subsidiary in India to do its year 2000 repair work. With most of its task completed, the 150-person unit has been coast as a provider of IT services to companies that provide services to the financial sector, according to CIO

Ed Hourihan.

So far, the company has a deal to provide support for IBM financial services customers, Hourihan said.

More companies should expect to see such benefits, said Chris Le Toq, an analyst at Gartner Group Inc. in San Jose, Calif.

"These are all excellent examples of the benefits of responding to a major threat with tools and methods that companies didn't have or use before," Le Toq said. ■

Developer Sues Microsoft Over Plug-Ins, Applet Patent

Chicago company charges infringement

BY KIM A. HANSEN
CHICAGO

A small development tools company here sued Microsoft Corp. last week for allegedly infringing on a patent for Web browser plug-ins and applets.

Eolas Technologies Inc. wants to stop Microsoft from building, licensing or selling the Internet Explorer browser and Windows operating system. Eolas says that the products illegally use Eolas' patent for embedding small, interactive programs such as plug-ins, applets and ActiveX controls.

The suit, filed in U.S. District Court here, also seeks unspecified damages.

The concept of applets and plug-ins — miniature applications that users download from the Internet, such as stock tickers or animated scenes — isn't new. Netscape Communica-

tions Corp. was one of the first vendors to popularize them with its Web browser in the mid-1990s.

1993 Demo

But Mike Doyle, chairman and CEO of the 10-employee Eolas, said he invented the idea and demonstrated it in public as early as 1993.

"This industry has some problems to deal with relating to companies that see a good idea and, rather than taking the proper approach to license [it] from the creator, turn around and copy and build their own version," he said.

Doyle received the patent last November, four years after applying for it.

A Microsoft spokesman declined to comment on Eolas' infringement suit, saying that company lawyers hadn't yet read it. ■

Microsoft: NT Is Next Version of Windows

No date set; interim Win 98 patches on tap

BY SHARON GAGNON
AND STEWART DICK

Microsoft Corp. last week denied published reports that it's planning one more consumer-oriented version of its Windows 9x kernel-based desktop operating system before developing a consumer version based on the NT kernel.

The reports last week quoted Microsoft spokesmen saying another version of Windows 98 will be released because the NT version is delayed. But those reports were wrong, said Craig Beilinson, a product manager for the corporate-oriented Windows 2000 (the former NT 5.0).

Although there will be patches and minor upgrades to Windows 98 in the interim, "The next major version of

Windows for consumers will be based on the NT architecture," Beilinson said. "We're not going to talk about a date. It's too early."

Rumor Squashing

Analysts agreed that a non-NT-based consumer Windows version likely isn't in the cards.

"I think it's unlikely," said Rob Enderle, an analyst at Cambridge, Mass.-based Giga Information Group Inc. "Pretty much everyone who moves and breathes that can do this kind of work is on the Windows 2000 team."

"Will there be a consumer release of Win 98 or some other [operating system] between now and when they put another kernel in? I doubt it," echoed Chris Le Toq, an ana-

lyst at Gartner Group Inc. in San Jose, Calif.

Furthermore, Le Toq said, "stories of no NT-kernel-based [consumer operating system] for two to three years seem unlikely... They've had NT Consumer ready to go for a while. Whenever they demo NT, they show it with games, DirectX, Plug and Play — all the things a consumer needs to make it work well."

Microsoft has slipped in delivering the second and third betas of Windows 2000 and most recently said Windows 2000 will be released late this year. But some analysts predict a ship date well into next year.

"Within six months [of that ship date], you'll see an NT consumer product of some flavor," Le Toq said. ■

Computerworld staff writer Tom Diederich contributed to this story.

Corrections

A Feb. 1 Business section story ("Continuing Education," page 56) misstated the number of PricewaterhouseCoopers consultants enrolled in a customized MBA program. It's 45.

A Feb. 1 Business section story ("Investment Site Tumbled For Plain-English Queries," page 47), misstated the technology Scudder Kemper Investments Inc. used to support natural-language queries on its Web site. Scudder developed its technology in-house.

A Feb. 1 News story ("Compaq/DEC Unveils Mixed-Platform Storage," page 25) misstated the speed of Fibre Channel data transmissions. It's 100M bytes/sec.

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BRIEFS

SEC Seeks Money To Detect Fraud

In an effort to better combat online stock trading fraud and abuse, the U.S. Securities and Exchange Commission is requesting an additional \$6 million in its fiscal 2000 budget. The money would be spent to develop online tools to analyze high-risk firms and to access online trading information, among other things.

IT Execs upbeat on Global Economy

IT executives who do business internationally are optimistic about the economy this year, according to a survey from PricewaterhouseCoopers in New York. The 376 executives surveyed said they expect their revenues to grow 25.3% in average this year, compared with 20.3% last year.

Nasdaq Urged to Ignore Volatility

A special Monday Stock Market Inc. committee of brokers and market makers voted to recommend that officials of the all-electronic stock market not be given the power to temporarily halt trading of volatile internet stocks. A Nasdaq committee is expected later this month to discuss those kinds of trading suspensions.

Short Takes

A federal district court judge in Philadelphia blocked enforcement of the CHILD ONLINE PROTECTION ACT last week. . . . ORACLE CORP. this week is expected to announce a deal to have its enterprise resource planning applications preloaded on DELL COMPUTER CORP.'s servers. . . . Baltimore-based FIDELITY AND DEPOSIT CO. and FID developed a \$4,000 system to help mitigate electronic-commerce risks and cover potential losses. . . . COMPUTER SCIENCES CORP., based in (E) Spang, Calif., won a \$300 million, nine-year contract to implement new payroll and benefits systems at the U.S. POSTAL SERVICE.

TUPPERWARE TO SELL ON THE WEB

The party ain't over, but venerable plastics vendor sees need to try new channels

BY ROBERTA FUSARO

THAT WILL still be parties, but Tupperware Corp. by year's end also will be selling its plastic food containers directly over the Web.

Besides the Web, Orlando, Fla.-based Tupperware will use TV infomercials and shopping mall kiosks — along with the traditional home parties it has used as a marketing tool since the 1950s — to sell its products.

Analysts said Tupperware's about-face on direct sales points to a challenge most manufacturers face today: finding a way to satisfy customers who want to buy online from the manufacturer while not ignoring traditional distri-

(www.tupperware.com) but it was established mostly for brand awareness purposes and as a means of locating the closest salespeople, said Christine



THIS TOO SHALL PASS? Despite moving to the Web and other channels, Tupperware still hopes to sell goods at events like this 1950s party

bution channels.

Tupperware has had a Web site for the past few years

Hanneman, vice president of financial relations at the company. Tupperware has never

sold products over the Internet and has kept a tight leash on regional distributors that tried to do so. The idea is not to undercut the local distributors, said Franca Celli, a Tupperware consultant in Canada.

By using the Web, the company plans to reach out to customers "who don't know how to find our products or sales representatives in their area and who don't want to go to the parties," Hanneman said.

Bigger Audience

Tupperware can reach a broader audience over the Internet, said Lisa Fontenelli, an analyst at Goldman, Sachs & Co. in New York. The question is how will it standardize pricing for different products in different regions over the Internet, she said.

"Tupperware needs to find a way to respond to the market demand for E-commerce and help make it a plus for their distributors — such as referring follow-on business to a customer's local representative," said Cliff Allen, president of QuestTrack, a Web-personalization software company in Los Angeles. ■

Network Storage Standards to Face Off

EMC Corp.'s spec vs. open standard

BY NANCY DILLON

A new standards showdown emerged last week as EMC Corp. announced a proprietary scheme for managing devices on a Fibre Channel-based storage-area network. The EMC technical specification is expected to compete with an open standard being promoted by the Storage Network Industry Association (SNIA) in Mountain View, Calif.

The engineering specification in question is important because it should enable all Fibre Channel storage devices — such as hubs, switches and host adapters — to respond to standard management protocols, such as the Simple Network Management Protocol.

Hopkinton, Mass.-based EMC has 11 vendors signed up to follow its specification, called FibreAlliance. The

SNIA has a membership of about 70 companies, including EMC. Both camps are expected to submit their competing versions to the Internet Engineering Task Force this spring.

"To me, it's like two cats in an alley," said Nick Allen, an analyst at Gartner Group Inc. in Stamford, Conn. Allen said he considers any move toward standardization good for the

market, but EMC is "using its clout to bypass committees and cause people to do things [its] way." EMC officials countered by saying they have been working on their spec for about a year and that it will be the first to meet user needs.

FibreAlliance products are expected next quarter. ■

Microsoft Launches Military IT Recruiting Program

Initiative will aid resellers, customers

BY BARR COLE-BONOLSHI

Microsoft Corp. last week announced a plan to retrain military personnel for jobs in the labor-crunched high-tech industry.

The Redmond, Wash., software vendor isn't desperate for workers itself, but a spokeswoman said that staff shortages are hurting its channel

partners and customers.

Through the Microsoft Skills 2000 Military IT Career Initiative, the 200,000 service members who leave the military each year will be offered training in Microsoft products as well as job counseling.

Training will be paid for by the government or financed with a loan from Microsoft.

The program will be rolled out to more than 140 military bases across the country this month.

Microsoft estimated that it

will train 40,000 military personnel per year.

Travis Davis, who retired from the army in 1995 after 19 years of service, said he thinks the program is a great idea. When he was discharged, he got certified in several Microsoft products and now works as an infrastructure specialist at Electronic Data Systems Corp. in Plano, Texas. "There is a lot of untapped talent in the military," Davis said.

In addition to Microsoft, the effort is backed by the U.S. Department of Labor and some of the nation's largest job placement companies, including Manpower Technical, Teksystems, Adecco/TAD Technical and Olsten Staffing Services/IMI Systems. ■

Legato NetWorker for Windows NT Backs up the Microsoft TerraServer.



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www.legato.com/terraServer

*With enhancements provided by Compaq Computer Corporation.

LEGATO

Users Reluctant to Embrace LAN Telephony

BY BOB WALLACE

Although vendors are promoting the convergence of voice and data as part of the next

major networking trend, many users are skeptical of sending phone calls over their LANs. They see little or no benefit to

this approach to handling voice traffic.

Cisco Systems Inc., 3Com Corp. and others are starting to

push IP telephones that plug in to LAN switches as a successor to the nearly ubiquitous and long-proven private branch exchanges (PBX) that have handled voice traffic for decades.

"My gut feeling is that [the

promised] savings are perceived, not actual," said Eric Pytko, global infrastructure coordinator at Eastman Kodak Co. in Rochester, NY. "And how will these IP phones be integrated with your voice-mail system? This vs. a new PBX doesn't make sense."

Users are more likely to squeeze as much time out of their PBXs after they're written off than to decide to make the capital expenditure to replace the system with a LAN telephony package, Pytko said. Analysts said that users typically depreciate PBXs over five- to 10-year periods.

What they won't tell you about Web publishing.

Rumor to the contrary, the best language for publishing your legacy COBOL applications on the Web isn't Java, C++ or VB—it's COBOL.

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PMI MORTGAGE'S JIM FEY: "I don't see the cost savings yet!"

"I just don't see where the cost savings are yet, and wonder if you want normal [networked] business applications and bandwidth-intensive video streaming and conferencing impacted by the voice traffic," said Jim Fey, director of strategic technologies at PMI Mortgage Co. in San Francisco. "If you have a PBX that's working the way you want, why would you want to go through the hassle [of changing]?"

George Deyett is slightly more open to the idea of LAN telephony but won't seriously consider it until the technology matures. "It's in its infancy now," said Deyett, telecommunications operations manager at Polaroid Corp. in Waltham, Mass. "PBXs provide more features and can be tied to other systems like automated attendants."

PBXs support roughly 500 calling features on their phones, while LAN telephony systems support 20 to 25, said Maribel Lopez, an analyst at Forrester Research Inc. in Cambridge, Mass. IP phones support basic features such as call holding and call waiting, but not more sophisticated features such as an integrated directory, she said. ■

Q: What Comes First? Development or Integration?



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MICROSOFT STUNG BY BROWSER STANCE

Tapes damage contention that Internet Explorer is integral to OS

BY PATRICK THROBANE
WASHINGTON

THE ANTITRUST defense of Microsoft Corp. appeared to stumble badly last week over an issue users say is indefensible — the company's assertion that Internet Explorer isn't a separate application.

It was Microsoft Senior Vice President James Allchin's job to prove that the Internet Explorer browser and Windows 98 operating system are one and the same. The opening act for Allchin's testimony was a series of videotapes that touted the benefits of browser integration.

But lead government attorney David Boies used the tapes to set a trap. During his cross-examination, Boies pursued the tapes, asking Allchin to compare specific user benefits between the separate version of Internet Explorer offered with Windows 95 and the inseparable version in Windows 98.

Allchin was forced to acknowledge that, stand-alone or bundled, Internet Explorer delivered similar user functionality. For several users, the government's contention that the browser is a separate application is a given.

If anything, the browser's integration with the operating system is hurting the user experience, said Bobby Chow-

bury (bobbyc@unitedmedia.com), chief technology officer at United Media Inc. in New York. "[Internet Explorer] crashes... my entire desktop goes bonkers," he said.

The browser's deep integra-

tion "has added a lot of instability to the entire operating system," added Chowdury, who nonetheless said he believes Explorer is the best browser technology.

Greg Rutvik (grutvik@uswe-

com), the systems administrator at Sussman, Shank LLP, a Portland, Ore.-based law firm, also said he doesn't accept Microsoft's contention that the browser isn't separate and calls it an add-on to the operating system. But, he said, he sees no problems with the integration, doesn't feel consumers have been harmed and believes the government's antitrust case is "just smoke."

Ken Eckel, senior technology officer at Hosokawa Bepex Corp. in Minneapolis, a manu-

facturer of processing machinery such as compactors, said he thinks Microsoft's bundling of Internet Explorer with Windows is marketing-driven, and he laughs at the notion that the browser is not a separate application. But that notion is precisely what Microsoft is urgently trying to convince Judge Thomas Penfield Jackson of.

The government's case rests in large part on its charge that Microsoft is illegally "tying" one product, the browser, to another product, the operating system, to crush Netscape Communications Corp.

But Microsoft faced other problems last week. In a turn of events that stunned the courtroom, the government was able to show — beyond all doubt — that the company had used multiple PCs to film a videotape segment it wanted to use in attack government evidence.

The videotape demonstration was intended to illustrate operating system problems Microsoft said are created by the browser-removal program developed by Princeton University computer scientist Edward Felten.

Microsoft had implied that the videotape was a seamless segment, but it acknowledged that was incorrect when shown the evidence in court. Jackson shook his head and scolded Allchin for presenting unreliable evidence. "It's very troubling," the judge said.

Saying it "stands by" the demonstration, Microsoft later said in a statement that the company would refile the demonstration with government officials present to allay the skepticism. ■

NetWare Service Pack a Welcome Sight

Bevy of patches and improvements

BY SHARON DAVID

Novell Inc. has released the first service pack for Version 5.0 of its NetWare operating system. And industry watchers said the release should boost already growing sales.

The service pack includes hundreds of fixes and a few additions, according to Brian Faustyn, Novell's product marketing manager for NetWare 5.0. The pack can be downloaded at www.support.novell.com.

"This is good. The service pack should correct a few issues we've seen with NetWare 5.0," said Stephanie Benoit, academic computing coordinator at the Community College of Southern Nevada in Las Vegas. "But, overall, it was a clean upgrade. NetWare 5.0 lets us take better care of our 41,000 users than we could

with NetWare 4.0." Faustyn said the service pack adds a network address translator, which lets a single authorized IP address represent an entire

organization. The pack also fixes interoperability problems between the directories in NetWare 4.0 and NetWare 5.0.

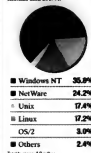
"That sounds like some important improvements," said Dan Kusnetzky, an analyst at International Data Corp. in Sarasota, Fla. "It will only help NetWare 5.0, and I think people are buying in to it very rapidly anyway. NetWare shipments grew about 11% between 1997 and 1998, largely on new sales of Version 5.0."

Kusnetzky noted that Novell got NetWare 5.0 and a service pack out the door well before Microsoft Corp. even put a date on the release of the next version of its rival operating system, Windows 2000.

"Novell is taking advantage of a window of opportunity that Microsoft left open with NT being late," Kusnetzky said. "NetWare sales are really healthy. It doesn't mean [users] won't buy [Windows 2000], but they are buying in to NetWare." ■

OS Market Share

Breakdown of operating system licenses sold in 1998



SOURCE: INTERNATIONAL DATA CORP. FORTHCOMING RELEASE

Users Seeking Support for Move to 64-Bit

Microsoft timetable will drive migration

BY APRIL JACOB

With Intel Corp.'s Developer Forum set for Feb. 23-25, users may hear more from the chip maker about its plans for 64-bit computing. Users already have their own concerns about what it will take to migrate to the next generation of PC processor, the IA-64, widely known by its code name, Merced.

The foremost need, analysts

and users said, is support from operating system and software application makers — and Microsoft Corp. and its Windows operating system are first on the list. Because Microsoft isn't planning a 64-bit operating system until the upgrade after its upcoming Windows 2000, users may have at least a few years to wait.

"There would be no reason"

to migrate to 64-bit hardware until operating system and software vendors offer full support and deliver products that are proved to perform,

said Robert Lemke, a network analyst at clothier OshKosh B'Gosh Inc. in Oshkosh, Wis.

Martin Reynolds, an analyst at Gartner Group Inc. in Stamford, Conn., said early adopters are likely to be corporations running data- and horsepower-intensive software like database and financial applications.

For those users, improved performance could present an attractive business reason to move to 64-bit systems.

Intel-based, 64-bit hardware is due next year. Intel plans to offer simultaneous support for Unix, which traditionally supports high-end applications.

"By 2005, we won't see much [on servers] that isn't IA-64. It will be completely dominant," Reynolds predicted, but desktop adoption won't be commonplace until 2007. Early adopters will include companies looking to transition some mainframe work to Intel platforms, said Amir Ahari, an ana-

lyst at International Data Corp. in Framingham, Mass.

"Because of that, [hardware] availability and the ability to do more workload is very key," Ahari said. "If there is a lot of code to be rewritten, then [people] are back to square one with a very high-cost solution."

Paul Tinnello, vice president of information technology at Oldwick, N.J., insurance analyst A.M. Best Co., said he's interested in 64-bit computing but isn't sure that enough vendors are exploiting its capabilities to a level that lets users make adoption decisions. ■

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BRIEFS

AT&T: Voice, Data
Nets Y2K-Compliant

AT&T Corp. in Flushing Ridge, N.J., said last week its global voice and data network and customer billing systems are now fully year 2000-compliant. AT&T said about 20% of 300 million lines of code had date or time elements that needed changes. The effort cost about \$700 million over three years.

Few Companies Are
World-Ready

Less than 3% of companies worldwide are well-positioned to collaborate with supply-chain partners and customers, and to compete on a global basis, according to research by Meta Group Inc. in Stamford, Conn.

Web Privacy Survey

An industry-backed World Wide Web privacy study will begin March 8 to check whether Web sites are putting clear policies about what they do with users' personal data. The U.S. Federal Trade Commission has said it will review the results to help you have web industry self-regulation is working.

Europe Probes
HP Subsidy

The European Commission has opened an investigation into whether the Dutch government awarded a 20% limit on development incentives European nations can provide to private companies when it gave a subsidiary of \$23 million to Hewlett-Packard Co. to build an assembly plant. HP may have to refund the excess subsidy.

Short Takes

State legislatures in Washington and Virginia are taking up antitrust bills this session, similar to efforts in Texas and Maryland. ... More E-mail than first-class "snail mail" - 3.4 billion letters vs. 167 million - was sent in the U.S. last year, says a study by online research firm EMARKETER.com in New York.

CORBA VENDORS FORGE
CLOSER LINKS TO JAVA

Iona makes its move with acquisition;
users still wary of language's immaturity

BY DANIEL GREENSTEIN
SAN FRANCISCO

FOLLOWING the lead of several competitors, the leading vendor of object middleware last week strengthened the growing link between server-side Java development and the Common Object Request Broker Architecture (CORBA).

Iona Technologies Ltd. has acquired EJBHome Ltd., a British vendor of Enterprise JavaBeans, and joined Sun Microsystems Inc.'s community licensing program for Java. CEO Amrui O'Toole told developers that Java will be the language of choice for server-side development in about two years and that the company is preparing for that shift.

Java Connection

What some top CORBA vendors have done with Java

Bluewin Technologies Ltd.	Brought Enterprise JavaBeans (EJB) vendor EJBHome Ltd. and became Java licensee. The company also offers Object Web middleware for Java vendors.
IBM Systems Inc.	Brought WebSphere, which promotes use of the Java EJB-compliant application server.
Wangware Software Inc.	Was bought by Inprise Corp., a leading Java web master and vendor of a Java application server.

In the past year, many vendors of Java application servers have touted their products' CORBA support, and CORBA vendors have also increased their Java support. (CORBA lets objects and components written in different languages share data and functions.)

Iona's moves add to the company's previous Java support but are still significant, said Karen Boucher, an analyst at The Standish Group International Inc. in Dennis, Mass. There's now a consensus among major CORBA vendors that Java and CORBA will be integral to each other in future distributed object development projects, she said.

Still, many Iona users expressed wariness at the company's user conference here last week about using a relatively immature language such as Java for mission-critical, server-side programming. But some users said they could see advantages that would make the language more useful in the future.

For example, Options Clear-

ing Corp., a Chicago-based financial services company, recently developed a loan-trading and risk-management application using Iona's Orbis middleware and a Java front end, said Jeff Herr, lead technical specialist.

But the firm used C++ on the server side because it still regards Java as too new to be the basis of the entire application.

Others are more cautious. For example, some clients of New York-based Xenotrope Inc., which develops distributed object applications for large financial institutions, are reluctant to use Java because fewer of their programmers know it than C++, senior consultant Mike Reinertsen said.

But Reinertsen, who uses both languages, said Java is easier to use and just as capable as C++. "You can do anything you can do with C++ with Java," he said. ■

MORE ONLINE

For more information on CORBA, Java and Enterprise JavaBeans, see our Web site www.computerworld.com/news

Continued from page 1

Links On Tap for Rival ERP Apps

data from PeopleSoft Inc.'s payroll software to SAP AG's accounting module.

The upcoming interfaces are supposed to go much further than current application integration tools, which typically still require buyers to do plenty of development work themselves. But the big question, users and analysts said, is how widely applicable the prebuilt links really will be.

The concept is "hugely appealing," said Jack Mendelsohn, CIO at Petsmart Inc., a Phoenix-based retailer of pet supplies that's using integration tools developed by Software Technologies Corp. to help connect SAP's R/3 applications to more than 20 other systems.

There's a lot of effort that goes into specifying interfaces and writing them, whether you

use one of these tools or not," Mendelsohn said. For example, Petsmart began work on its 114 planned interfaces last year and expects to finally start quality-assurance testing on the first ones this month.

Prebuilt interfaces between applications "could provide a shell that you can build on" more easily, Mendelsohn said. But users with unique business processes and customized applications "would need to see how far down the road [the packaged approach] gets you," he added.

"The ideal scenario [for users] would be to just write a big fat check and not have to worry about integrating things," said Dan Sholler, an analyst at Meta Group Inc. in Stamford, Conn. "But it's a very small percentage of cases in which these [package inter-

faces] could actually be used in their pristine form."

Vendors such as Motorola, Calif.-based Software Technologies acknowledged that most users still will have to perform some customization and development to make the interfaces work. But they said their goal is to have the prebuilt interfaces take care of up

WHAT'S AVAILABLE NOW: Integration tools that include gateways to applications but force users to do lots of interface set-up work

WHAT'S ON THE WAY: Packaged interfaces and templates that promise more ready-to-go links among specific applications

WHAT TO WATCH FOR: Individual ways of doing business will likely still require users to customize parts of the interfaces

to 90% of the job. Software Technologies said it's working with Peoplesoft on a packaged interface tying the Pleasanton, Calif., ERP vendor's human resources software to SAP's financial applications. Peoplesoft wouldn't comment, but it's expected to announce the link in the next few weeks.

Virnia Technology Inc. in Miramar, Calif., this spring plans to announce templates for integrating different applications used in vertical industries such as telecommunications. And SmartDB Corp. in Palo Alto, Calif., is aiming for a June release of prebuilt application interfaces.

CrossWorlds Software Inc. in Burlingame, Calif., already offers predefined business processes for users of its application integration tools to follow.

Those have worked "in some fairly limited cases" but also usually need to be tailored to fit individual users, Sholler said. ■

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Dun & Bradstreet

Continued from page 1

Are Regulators Y2K Ready?

fine, but if products can't come through customs, there's no contingency," said Goodwyn, who's working with several shipping companies on the issue.

Worries Abound

Despite recent assurances from government officials that most federal agencies — including much-criticized regulators such as the Federal Aviation Administration — will meet the deadline, many executives in the private sector remain worried.

Analysts said they have good reason to be. "This is a very big deal for regulated industries," said Howard Rubin, a research fellow at Meta Group Inc. in Stamford, Conn. Regulators "need a holistic plan showing a timetable for systems contingency planning," he added. Some agencies are publishing

timetables, but users are worried about how realistic they are.

Regulators' readiness "is a valid concern. Other than Social Security, it seems like most of these federal agencies are receiving D and F ratings," Topor said.

The year 2000-preparedness of the Food and Drug Administration is critical to pharmaceutical companies that require approval for marketing new drugs, and that of the Federal Reserve Board is crucial to banks that need to clear big-dollar transactions through the FedWire.

"I'm not as comfortable as I'd like to be with the FAA's state of readiness," said Sandy Gieber, year 2000 program manager at Cessna Aircraft Co. in Wichita, Kan. Gieber said she would like to see the FAA's own contingency plans in the

event of a systems failure.

Persuading regulators to comply with those requests might not be easy. "You can't build a contingency plan for everything, but you can try to request audits with the government if they'll permit it," said Jon Rudzinski, a member of the Central New York Y2K User Group in Syracuse.

"If the FDA systems aren't compliant, that's going to put a big kink in the manufacturer's processes," agreed Cherise Vaughn, president of C-COE People Tech in Charleston, S.C. Her firm handles Y2K communication for C.R. Bard Inc., a medical device manufacturer in Murray Hill, N.J. "But I'm also very worried about the fact that the FDA doesn't guarantee any of the Y2K compliance information on its Web site."



C-COE's Cherise Vaughn worries about compliance guarantees.

Vaughn said many companies are posting "sweeping statements" on the FDA site, claiming that none of their products are affected by year 2000 issues. But she pointed out that if a medical device is past its five-year warranty — or has been sold to another manufacturer over the years — that FDA posting may be meaningless.

"A lot of manufacturers are making the false assumption that hospitals aren't auditing equipment that's old or out of warranty, but they really have to investigate those older products on their own," she said. "The FDA should put up there in big bold letters that people need more in-depth information than is posted on that site."

Users recommend close communication with regula-

tors in order to share contingency plans among all affected parties. And if regulators don't cooperate, users "have a duty to inform those regulators" and to contact lobbyists within their industries to warn the Clinton administration about their status, said Fred Talbot, a professor at The Owen Graduate School of Management at Vanderbilt University in Nashville.

Federal agencies such as the FAA must disclose regular status reports to Congress and to watchdog groups such as the General Accounting Office.

The Federal Reserve Board, which clears bank-to-bank payments and automated payments such as electric bills, has certified 98% of its mission-critical systems as year 2000-compliant, with the rest due to be completed by April 1, a spokeswoman for the Washington-based agency said.

Computerworld senior editor Carol Shwa contributed to this report.

Continued from page 1

Software Helps Customer Service Play Favorites

And the numbers are all right there on the customer service representative's screen.

So say goodbye to the first-come, first-served rule that governed the school lunch line. Thanks to technology, a growing number of banks, airlines and retailers are answering calls based on your profitability to their bottom line.

"More companies are adopting an approach that says everybody deserves good service, but some customers deserve better service than others," said Zack Taylor, general manager at Lucant Technologies Inc. in Roseland Ridge, N.J.

"It's like an airplane," Taylor said. "Everybody gets off at the end of the flight, [but] first class just gets off a little [happier] and with more amenities."

Customers may be envious, but companies see a clear advantage.

At L.L. Bean Inc. in Freeport, Maine, segmentation let marketers draw up a very targeted list of recipients for its new Freeport Studio catalog, which features dresser

clothing. Callers ordering from the new catalog are automatically routed to product specialists who are trained to offer advice about matching shoes and jewelry, said spokeswoman Joanne McGowan.

The most profitable customers at Bank of Montreal — identified by a new multi-million-customer knowledge database system — are assigned designated banking consultants who specialize in the banking products they use most.

Playback to Play

Using the same system, which cost between \$2 million and \$5 million to develop, the bank has created hundreds of targeted marketing campaigns that have worked to boost previous customer response rates of 1% to 2% to as high as 20%, according to Dave Mordley, vice president of data mining.

But creating classes of customers, and then treating each accordingly, has its potential pitfalls. Among them is relying too heavily on a customer's buying history rather than his

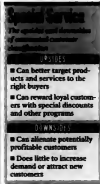
potential for becoming a highly profitable customer.

On the retail front, a big pitfall is that catalogs and other sales programs customized to targeted subsets of customers sacrifice the element of serendipity, which frequently plays a key role in scoring new customers, said Herb Edelstein, a data mining expert and president of Two Crows Corp. in Pomona, Md.

Another problem with reserving extra services and special discounts for already profitable customers is that it rewards loyalty but doesn't work to increase demand, said George Cressman, an analyst at Strategic Pricing Group Inc. in Marlboro, Mass.

In many cases, "you're giving something extra to people who would have bought your service anyway," Cressman said.

That tendency to look backward can be especially dangerous in business-to-business markets. Today's small business account or customer could turn out to be one of tomorrow's most profitable com-



mercial accounts.

What companies need to consider is the huge potential for small companies to grow quickly. Hewlett-Packard Co. started out as a small company. Amazon.com Inc. is another example, Cressman said.

Malvern, Pa.-based Vanguard Group, which manages more than \$450 billion in mutual funds, also classifies customers, but not by profitability.

"The danger would be that you incorrectly size up a client as having low potential or low profitability and then treat

them with not very good service, and [then] find out it's the wife of a CEO of a major corporation," said Bob DiStefano, managing director of information technology.

Instead, Vanguard is launching a project to develop a customer contact system that will let customer service workers know virtually everything about a customer, right up to his visit to Vanguard's Web site the night before.

"If [workers in] the call center knew you were on the Web using our modeling software to come up with a college savings plan for your 10-year-old, they might start the conversation by saying that," DiStefano said. "It's like walking into a bar and somebody knows who you are. You feel a little more at home. It's the Cheers approach."

The danger, of course is customers' fear of Big Brother.

The challenge now, DiStefano said, is "differentiating between when a client would appreciate you knowing something and when that would be scary for the client. It's a hard situation to do well."

MORE ONLINE

For resources related to customer profiling systems, see our Web site: www.computerworld.com/resources

A high-contrast, black and white photograph. In the foreground, the silhouette of a person is visible, sitting at a workstation. The person's head is turned slightly to the left. On the wall behind them, a rectangular sign is mounted. The sign has the text "WHERE'D YOU GET THAT WORKSTATION?" written on it in a bold, sans-serif font. The background is mostly dark, with some vertical light streaks suggesting a window or a brightly lit area. The overall mood is mysterious and somewhat provocative.

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Better answers:

EURO: GETTING A U.S. PERSPECTIVE

Euro project leaders consider tactical issues, debate cost and impact vs. Y2K

THE LAUNCH of the euro — the unified European currency shared by 11 'in' countries — is having a dramatic effect on the ways U.S. companies are conducting business on "the continent." But even though euro projects commonly are viewed as more strategic than year 2000 projects, the jury is split about which one is more expensive.

But are euro and year 2000 projects an apples-to-oranges comparison?

To explore those and other strategic and tactical issues, *Computerworld's* senior editor Thomas Hoffman recently co-hosted a euro panel discussion with **Burton Kashiwari**, president of Niche Systems Inc. (www.nisinc.com), a New York-based euro strategy specialist.

The panel, sponsored by PricewaterhouseCoopers, was held at the Roosevelt Hotel in New York last month and consisted of European Economic and Monetary Union (EMU) project managers from four U.S.-based companies: Caroline Watterwae, managing director at Credit Suisse First Boston Corp. in New York; Jeffrey I. Berger, director of foreign exchange and commodity risk management at AlliedSignal Inc. in Morristown, N.J.; Karl P. Boshard, chairman of the EMU steering committee at 3M Europe S.A./N.V. in Diegem, Belgium; and John D'Aquila, chief financial officer at Comstock Inc. in New York.

KASHIWAR: Why has EMU's strategic value been so late in hitting the radar screens of U.S. companies?

D'AQUILA: EMU was going to be another computer project, and we [U.S. companies] were so

overwhelmed with Y2K, software upgrades, etc., that we didn't want it to be a priority — we were stretched.

WATTERWAE: I think American businesses are still struggling with the full impact of EMU.

BOSHARD: [As a result of the move to euro, Europe will become the world's second-largest trading bloc — that's a dramatic change.]

Whether the appreciation of these changes are recognized at the board level at all kinds of companies across the world to the fullest extent, I would question that.

CREDIT SUISSE'S Caroline Watterwae: Y2K is smaller, more extensive

Shifting Sands
BERNER: I've come to the conclusion that the platform and the

drivers for change in Europe were already in place. The EMU process sped up [the pricing and market changes that were] ultimately going to occur anyway.

BOSHARD: You really have to revisit every single process in your company if you're doing the business today in Europe.

Many U.S. companies haven't considered Europe to be an interesting market because it's been too segmented.

There is no short-term result a CEO can show now if he takes the right actions in Europe, but the opportunity to be there first [under the euro] should be enough incentive to reconsider one's position.

Price Transparency

D'AQUILA: I look at EMU as an example of the empowerment that consumers are going to have with the Internet. If you don't get on the bandwagon, you're going to miss the train

when E-commerce is fully rolled out [in Europe]. Business will not be able to rely on the price structures that were built in the last 20 to 30 years due to [geographical] fragmentation.

Apple Computer now has the same euro price for the iMac in Austria, the Netherlands, France, Spain and England. That wasn't true 90 days ago.

BOSHARD: If that price corridor is too wide then you've got a deal. Because there is nothing to stand in the way of buying your product in Italy or Portugal and selling it in Germany or France.

CW: Have your EMU projects run close to budget? What areas exceeded budget?

D'AQUILA: Where the costs were significant — and where we're still not done — is in the areas of [systems] implementation and training salespeople to be able to quote in French francs and euros simultaneously and how to handle customer requests centered around the euro.

We also underestimated the cost of building a virtual private network, which is still under way.

So we've been going over budget on the labor and the consulting.

KASHIWAR: How far over were you on training?

D'AQUILA: The cost was at least double what we expected. And many of the programmers are U.S.-trained and not familiar with the nuances of European business. VAT [value-added tax] laws and rounding and so forth.

BERNER: We were pretty close to our budget. We did use our auditor to help us with some strategic issues in 1999 and in the future.

Those were unanticipated costs, but I think it was money well-spent since it helped us realize how big an issue this

was and to fully address the scope of the issue.

CW: What's more expensive — year 2000 or the euro?

BOSHARD: EMU-related costs are not really comparable from one company to another. The overall EMU project costs — \$35 million to \$50 million for 3M — are larger than Y2K costs. We're estimating that we need something like 250 to 300 full-time equivalents on the IT side during the [three-year EMU] transition period, not to mention finance specialists and user resources.

compliance by Jan. 11, we clearly would have had some embarrassing situations with our customers explaining why as a major financial institution we were not able to open for euro business.

If we had a major problem with Y2K, we're out of the market. And it's not something you can fix just like that.

KASHIWAR: Is Y2K spending vs. euro an apples-to-oranges comparison?

WATTERWAE: Yes, Y2K and euro are quite different. [Unlike Y2K], not every country's sys-



3M Europe's Karl P. Boshard, right, (shown with AlliedSignal's Jeffrey I. Berger, left): "EMU and E-commerce will fundamentally change the landscape of the European market"

BERNER: The euro project is a much more expensive proposition [than Y2K] because it's not simply a computer project. It's a complete re-evaluation of how we do business internationally.

It's fraught with more opportunity than Y2K, which is just a necessary evil.

D'AQUILA: While I'm not that close to Y2K [at Comstock], my impression is that Y2K has actually been more expensive at our company than EMU at this point. But in the long run, [EMU] should be more expensive when you factor in all of the business issues.

WATTERWAE: Y2K is more expensive and extensive. We [CS First Boston] have hundreds of critical systems in many countries, a vast network of more than 15,000 workstations, more than 15,000 servers and dozens of buildings to address. Remediation and testing on this scale is a phenomenal undertaking.

Although the euro involved businesses in multiple countries around the globe, it was a more contained exercise.

If we had not made it [EMU

items have to be modified and tested for the euro.

With the euro, we had to do testing with [settlement systems and agencies such as] Target, ITC [Depository Trust Co.], EuroClear and in the 11 'in' countries. With year 2000, we were doing industry testing all over the world. There are over 300 tests scheduled.

D'AQUILA: I think the apples-and-oranges issue depends upon your view of the project. With the euro, you're not only getting your systems up to play, you're addressing a new pricing model, you're getting your company to understand how to do business in the 21st century.

WATTERWAE: I don't think that's any different than if you're strategic with Y2K. Y2K would be the survival of the fittest — if we feel confident about our program, we can view it as a competitive advantage in the marketplace.

D'AQUILA: I'm talking more about the strategic issues of how you do business, how you compete, what's going to make us different from the competition in the next few years.

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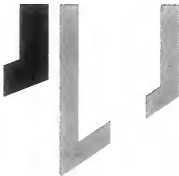
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you be here?' I say,**



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Jeff Polagrove, CTO
Harvard Lyons Investments



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Microsoft

A CRASH COURSE IN MANAGEMENT

Utility Y2K chief converts trial by fire into chance for growth

Editor's note: The package of articles on pages 24, 28 and 29 is the fifth in an occasional series following the progress of six companies as they work on their year 2000 problems.

BY JULIA KIRO

WHEN ARENA SAYS the job of a year 2000 manager can't be planned, he's not planning. Before taking on the role at \$2 billion Conectiv Inc., Chris Arena had never been invited to appear on a TV news program or make an educational video.

"These are all opportunities that wouldn't have presented themselves," he says. He "grabbed" a position that nobody else at the Pleasanton, N.J., utility wanted three years ago, said Arena, 36.

But make no mistake. It hasn't all been applause and roses. Except for his honeymoon 14 months ago, Arena hasn't taken a day of vacation since taking on the manager's job. And for the first year of the project, he couldn't sleep at night.

"The project was so big, and I couldn't visualize how this plan of attack would be executed," he recalled.

Arena's triage approach isn't without risks. The idea is to first fix the computer systems that directly impact the company's 1 million customers, such as safety systems and the turbine generator controls that keep the lights on.

The rest, including internal financial applications for measuring the company's business performance, fall into the "non-showstopper" category.

It took Arena about six months to identify and prioritize all the systems at Atlantic Energy Inc., which later merged with Delmarva Power & Light Co. to form Conectiv.

Then came the challenge of explaining the triage strategy to department heads and other managers. That's when he really started to grow professionally, according to Arena

and his colleagues.

"Early on, I showed a lot of frustration. What I learned in six months, I was trying to force down people's throats in a one-hour meeting," he said.

He would work out his frustration at home, with his hands—banging nails, sawing and staining wood. In the last three

years, he finished his basement and built a 320-sq-ft addition and a deck onto his colonial-style home.

Now, by contrast, "I see him roll with the punches better," said Fred Knight, the leader of a team of contractors Arena assembled to work on the project.

But not always. "My lowest point came right before the merger," Arena recalled. "I finally had gotten a handle on

this project and knew what I needed to do for Atlantic Energy, and now I had to do it for another company.

"Also, I wasn't sure there was someone on the other side doing the same things I was of whether there was going to be another project manager that wasn't me. Plus, now I had to go and do all the sales pitching all over again on the Delmarva side."

As it turned out, Arena was appointed manager of the combined project. He also succeeded in getting the newly merged company's year 2000 agenda high on the corporate priority list. One example: The project's budget increased from \$3.25 million to the current \$5 million. Conectiv also expanded the project team to

PROJECT UPDATE

Conectiv

Year 2000 budget: \$5M

Lines of code: 25 million

People on project: 15

CIBC's Burns Knows What to Say, and How

Varied background and persistent style has helped bank's Y2K effort

BY THOMAS HOFFMAN

John Burns knows how to sell an idea to senior management. He learned by catering to IBM and Microsoft Corp. enterprise clients for more than a decade.

So when he took on the year 2000 project at Toronto-based Canadian Imperial Bank of Commerce (CIBC) in 1995, Burns knew what to say—and what not to say.

"If, in 1995, I were to say that Canadian banks were to spend over \$1 billion and that people were going to withdraw their savings and head for the hills, [management] would not have believed that," Burns said.

Instead, he sug-

gested that a small team investigate the millennium bug problem, size it up and take a methodical approach to deal with it.

That's typical Burns, said his friends and colleagues. Burns "is more persistent than someone who does a lot of ranting and raving, which is important for year 2000. When you're looking at a four-plus year

project, you need to get people on your side and not jump on them with impatience," said Tom Strong, a senior vice president at CIBC and one of Burns' colleagues from his IBM days.

It was the importance and the global reach of the year



CONECTIV'S CHRIS ARENA has learned many professional lessons—and completed some home improvements—while battling the Y2K bug

include more than 50 business and IT representatives, up from seven computer programmers before the merger.

Arena has earned his team's respect, especially the project's core team of programmers and analysts, all of whom are 15 to 20 years older than he is.

Arena "was the kind of guy who was always 'can do' and got it done, whether he had the

experience or not," said Ray Reganato, who came out of retirement at Arena's request to work on Conectiv's year 2000 project.

Arena said he wants to work on more high-profile projects at Conectiv, maybe taking on an SAP implementation next.

His older colleagues are proud of Arena's growth. "It's kind of like seeing your son off to college," Knight said. ▀

grown children. "I'm working no more hours than I did two or three years ago. Otherwise, people would leave us and staff retention on this project is critical."

He also has devised a nine-step methodology for the project so that "if I disappear, the project will keep humming right along," said Burns, whose typical day runs from 7:30 a.m. to 6:30 p.m.

Fortunately, he lives only 10 minutes from his Toronto office.

That lets him spend more time with his wife, Andrea, whom he met at IBM more than 30 years ago. When he was a third-shift operations manager at IBM's service bureau in Toronto and Andrea typed up his reports.

John and Andrea, who are both theater buffs, were able to catch *Les Misérables* on New Year's Eve this year.

Good thing, said Burns, because he's "going to be a little busy for the next one." ▀

PROJECT UPDATE

CIBC

Year 2000 budget: \$32M

Lines of code: Between 75 million and 100 million

People on project: 400

CIBC'S JOHN BURNS has used persistence—not Matriculas—to keep his company's Y2K effort on track

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LIVING FOR THE Y2K MOMENT AND BEYOND

Intensity punctuates project leader's style

BY MARTYAN JOHNSON

"YOU DON'T work on this project, you live it." Paul Maszczak speaks those words from the vantage point of 21 months inside a year 2000 project. That odyssey has profoundly changed his outlook on life, as well as his work as corporate director of information technology at C.R. Bard Inc. in Murray Hill, N.J.

"Nothing I've ever done has shown me the importance of living every moment, of optimizing everything," he explained. "Other Y2K project managers I've talked to have also felt this. If you don't have a passion about this, your chances of success will be slim or none."

Maszczak has been leading a tightly knit team of 10 people — six work remotely — who handle everything related to the \$1.3 billion medical device maker's year 2000 conversion. That encompasses not only remediation efforts on 8 million lines of IBM mainframe and AS/400 code, but also extensive communication with hundreds of Bard customers and suppliers throughout the U.S., Japan, Australia and Europe.

He rises before dawn every day to check e-mail and phone messages, arrives at the office by 8 a.m. and works until mid-evening. "Then I'll spend till 10:30 or 11 p.m. online, go to sleep, get up and do it all over again. It's 18 hours a day, seven days a week," Maszczak, 47, said matter-of-factly.

Yes, he has heard the word "workaholic" more than once lately. He already has turned down several other job offers, including one from a leading New Jersey law firm looking for a year 2000 expert to evaluate potential lawsuits.

"I took this on, and damned if I'm not going to get it done," said Maszczak, son of a career Marine officer. "Y2K is not a career

a singular project. It's a conglomeration of a whole bunch of projects."

An ardent fisherman, motorcyclist and gun collector, Maszczak has especially felt the impact of year 2000 work on his life during the past year. He no longer watches TV or listens to music, choosing more solitary activities instead to revive his spirit. He has returned to photography again, a hobby he had abandoned 15 years ago.



C.R. BARD'S PAUL MASZCAK says he hopes he'll have more time to ride his Harley-Davidson after the year 2000 crash.

"The only mental break I see Paul taking anymore is with his camera," said Cherie Vaughn, president of C-Coe People Tech in Charleston, S.C., the subcontractor handling Bard's year 2000 communication. "We'll be walking along and something will catch his eye, like an unusual window or a weather vane. He'll get out a special camera, and for about five minutes, it will mesmerize him."

"Paul does keep to himself more

than he used to, but that's what keeps him sane," said longtime colleague Dan Murphy, a consultant who's the project's technical director. "I've also seen him let go of the day-to-day stuff. He trusts his people to do their jobs."

What Maszczak misses most in these winter days is the chance to ride his customized Harley-Davidson Fat Boy.

"My biggest fear is my ability to return to a normal life after this," Maszczak said. "This is getting addicting, this intense level of activity. But I do intend to take what I've learned and use it to the max."

Diplomacy Key to System Fixes at Nabisco

Manager's profile rises with weight of Y2K

BY GARY H. ANTHEL
PARSONSFAN N.J.

The assignment handed to Nabisco Inc.'s John Halper two years ago would have sent many information technology managers running for the exits.

Managing the \$8 billion company's year 2000 program carried with it huge responsibility but not much authority. And it was the kind of project where success could easily go unnoticed, but failure would surely turn its leader into a lightning rod for criticism.

"I don't think the job was seen by me or most people as a great career-enhancer," Halper said, laughing.

But now it seems the project could boost his career after all.

PROJECT UPDATE

Nabisco

Total budget: \$20M for information systems, \$20M for unrelated programs

People assigned: 50 to 200

Total systems: 800 (90% needed remediation)

Halper, with a degree in industrial engineering and operations research, coordinates and guides the activities of Nabisco's more than 100 semi-autonomous year 2000 projects in the U.S. and abroad. He has no staff but has "dotted-line" relationships to two dozen project managers around the world. He reports to Nabisco's CIO and prepares quarterly year 2000 status reports for the company's board of directors and the Securities and Exchange Commission.

Halper summed up the project this way: "It's checking off an infinite list of items that need to get done. ... It has a lot of risk, and if everything goes well, it's a non-event in the end."

But Halper isn't daunted. In fact, he has warmed to the project during the past two years, partly because it's no longer

seen as an IT backwater. "Back in 1997, who wanted to be the one on year 2000?" he said. "But now it's in the news every day. Now it's almost cool to be involved in year 2000 work. You can say, 'OK, I work on that.' You don't have to mumble it."

Halper, 39, said the project is teaching skills that can be applied in other realms. For example, it puts much emphasis on risk management and contingency planning, functions useful in any large, mission-critical project.

And Halper said all those dotted lines have honed his

skills in communication, diplomacy and management. "That is where projects are going in the IT world," he said. "Things are becoming cross-disciplined and cross-functional. And more and more, you are seeing project managers appointed where they don't own any of the project team."

"John has an interesting job," said Barbara Calhoun, year 2000 project manager for manufacturing systems. "He has to report upwards on work he's not doing."

But he's able to get the respect and support of people who don't report to him by being "extremely competent" and accessible, Calhoun said. "You can go to him, and he has a wealth of knowledge, and he's willing to share it," she said.

Halper said his biggest worry now is whether materials suppliers, service providers, transportation companies and wholesale buyers will be able to keep Nabisco's Oreos and other snack foods flowing smoothly after Jan. 1. Halper's now working with those parties and creating contingency plans, he said. ▢



NABISCO'S JOHN HALPER: "Back in 1997, who wanted to be the one on year 2000? ... Now it's almost cool."

Focus on Old Code Keeps Railroad on Track

With determination and a horsewoman's sense, manager saves custom applications

BY JULIA KING

There never was any question that Jean Kirkpatrick was the one and only person who should take charge of finding — and then fixing — the date bugs in the 300,000 Focus applications that Union Pacific Corp. had created during the past two decades.

She had more experience in the programming language than anyone in the company. She also knew people in every department.

Even more than that, Kirkpatrick, a 19-year Union Pacific veteran, an accomplished horsewoman, former barrel racer and single mother, had precisely the right personality: She loves a challenge and has the kind of single-mindedness necessary to overcome any and all obstacles — including a boss's skepticism — that stand between her and a goal.

The first of those challenges was finding the code to be fixed.

"We had never had a complete inventory of the Focus programs because it wasn't an IT-administered development area," she explained. The Omaha-based railroad also lacked automated tools to find and analyze the thousands of Focus programs to be assessed.

So Kirkpatrick decided to design and build her own tools. Management's first response was skepticism that she could do it, according to information systems manager Jim Koo. But now Koo credits Kirkpatrick's ingenuity with putting the Focus project ahead of schedule. Even outsiders have called looking to buy the tools, he said.

Year 2000 project manager Tim Brechbill, meanwhile, credits Kirkpatrick's tools with saving the \$0.5 billion railroad "literally thousands of dollars."

Kirkpatrick said the home-grown tools gather user and program usage data from spe-

PROJECT UPDATE Union Pacific

Year 2000 budget: \$46M

Project scope: 15,000 Cobol 7.000
Assemblers and 300,000 Focus programs

cial exit routines running on the company's mainframe computers.

"Each time a user would execute a Focus command, we could tell who was executing it and what jobs they were doing," she said. The data then was loaded into a database, which subsequently generated reports about how frequently individual applications were being used.

With that information in hand, it became clear which

applications should be remediated first, which ones could wait a little longer and which ones should be retired.

Armed with that information and full budget approval, Kirkpatrick really took off. She had been working alone but hired 13 contractors to analyze, fix and test the user-developed programs. Unable to recruit local workers with Focus skills, Kirkpatrick corralled experts from as far away as Los Angeles and Canada.

Now, two and a half years later, all that behind-the-scenes sleuthing is paying off. The railroad's Focus project is finished, and Kirkpatrick has

joined a much broader view of Union Pacific's overall business, which she said positions her well to manage large, operations-oriented projects across a range of departments.

"I now have an overall view

them," Kirkpatrick said.

"I don't know how we would have done it without her," Brechbill said. "Jean is somebody [who] just quietly gets things done without a lot of flag-waving."

Kirkpatrick said she believes that her knowledge of the company and its users helped immensely on the massive project. But knowing how to prioritize and improvise — skills she honed in her off-hours role as the mother of two — also paid off.

"As a single parent, I have to be very efficient — and to be efficient I have to be prioritized," she said. "If there's dust on the coffee table, that can wait."

"But I'm also a purist and pretty thorough," she added. "I don't know yet as far as the final sign-off, but I feel very good that no dust has been left on this project." ■



DESPITE A BOSS'S skepticism, Jean Kirkpatrick of Union Pacific forged ahead to fix bugs in 300,000 apps

because I've seen the entire cycle of building trains, moving cars and getting them to the right place at the right time with the right people on

SWIMMING AT HIGH Y2K TIDE

Merrill Lynch team leader keeps cool

BY THOMAS HOFFMAN

HIS OVERSEEING the most important project for the world's biggest investment bank. Thousands of tiny details can't be overlooked.

Million-dollar brokers are counting on him to get everything right. Senior management is breathing down his neck for project updates.

But Bob Dieckmann hasn't lost his cool. Not once.

Dieckmann, director of Merrill Lynch & Co.'s year 2000 program, "doesn't lose his head in a crisis situation," said Carol Sweeney, an attorney who oversees the company's regulatory reporting on year 2000. Dieckmann reminds Sweeney of

a line in Rudyard Kipling's poem "If" she said. "If you can keep your head while others are losing theirs." That makes me think of Bob," she said.

Sweeney notes Dieckmann's ability to customize project updates for the \$36 billion firm's senior executives as they prefer to view them — a key task. "He's able to rally the troops and revise the reports without getting rattled."

Dieckmann keeps his cool by taking dips in the pool. He swims four times a week for 30 minutes at a clip with his wife,

Roseanne, a Merrill Lynch technologist he married 18 months ago.

"I can solve a lot of problems when my head is under the water," said Dieckmann, 51. "But if we both have a bad day — forget it."

All in a Day's Work

Dieckmann certainly has had a lot of long days recently, as Merrill Lynch's year 2000 1,800-member project team puts the final touches on software remediation before shifting its focus to testing and contingency planning. While he tries to keep his weekends free and works only from 7:30 a.m. to 6 p.m., Dieckmann acknowledged that "there have been quite a few 11 o'clock nights lately" in wrapping up the final pieces.

Not that his ability to get things done has gone unnoticed. "Because he's worked in so many roles here, he knows where to get answers and where not to go," said John McKinley, the investment bank's

PROJECT UPDATE Merrill Lynch

Year 2000 budget: \$425M

Lines of code: 170 million

Status: Remediation done, testing continues

chief technology officer.

In his 15 years here, Dieckmann has worked in Merrill Lynch's three major areas: institutional trading, private-client and international private-client investments.

Big projects aren't new to him, either. From 1994 to 1995, Dieckmann spearheaded the broker's T-3 project, a sweeping, industrywide initiative requiring brokerages, clearinghouses and other industry players to adjust their systems to settle all transactions in three days instead of five.

Dieckmann said he's proud of his ability to build a strong team.

"I'm not afraid to find people who are smarter than I am to manage components of a program. If you do that, your projects are generally going to be successful," he said. ■



MERRILL LYNCH'S BOB DIECKMANN says he isn't afraid to find people smarter than him to join his Y2K program

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E-MAIL MARKETING GOES MAINSTREAM

Expected to be \$1B business in 2002

BY ROBERTA FUSARO

IN THE gold-rush world of commercial E-mail marketing and outsourcing, it's getting tough to tell the players without a scorecard.

In recent weeks, First Virtual Holdings Inc., E-Mail Publishing Inc. and Distributed Bits LLC merged to create MessageMedia Inc. in San Diego. And last month, the new E-mail management firm acquired Inquisit, an E-mail-based news and information filtering service on the Web.

Meanwhile, Sony Music Entertainment last month bought the E-mail newsletter business of InfoBeast Inc. InfoBeast has changed its name to Exactis.com Inc. and its focus to E-mail list management and outsourcing.

After the consolidation dust clears, a few key vendors stand to reap the benefits of this bus-

grooming market, analysts and users said.

In the old days, companies used list servers from small companies or shareware to blast E-mail to lots of recipients. Now they're conducting

which was considered a software provider because of its Listserv product, has added E-mail outsourcing to its offerings. Cambridge, Mass.-based Forrester Research Inc. predicted the list-hosting market will grow from about \$26 million in revenue today to almost \$1 billion by 2002.

Furry of Messages

VENDOR	MESSAGE HANDLING
1-Soft International	Up to 10 million messages per day
Exactis.com*	3.5 million messages per day
E-Mail Publishing**	10 million messages per month

*Formerly InfoBeast Inc.

**Part of MessageMedia Inc.

full-blown marketing campaigns by E-mail and relying on outside vendors to manage their E-mail lists and traffic.

That has prompted some vendors to reformat. For instance, Landover, Md.-based 1-Soft International Inc.

"Instead of spending \$3 to \$4 per call by a telemarketer, companies are realizing they can send E-mail messages at a penny apiece and eliminate the likelihood of a hang-up," said Forrester analyst David Cooperstein. And marketers are

waking up to the value of having one-on-one, continuous relations with customers via personalized E-mail, a user said.

Houston-based Continental Airlines Inc. has used E-mail to broadcast its "Cool Travel" specials newsletter, which offers consumers information about weekend getaways. The key to its success is that E-mail lets impulse buyers get information faster than they would by postal mail, said Ken Bott, manager of Internet marketing at Continental, an I-Soft user. Consolidation in the E-mail list-management market will continue, he said, because the vendors want to offer a broader array of services to large corporate clients. Those clients, in turn, "can play one company off the other" to get the best price, Bott said.

The biggest pitfall for the industry is the view that it's in the spam business. Analysts say that the club-like membership privileges provided by E-mail marketing set it apart from spam. "But we all need to be sentinels [against spam], because that yuck can get on all of us," said Tom Detmer, CEO and president of Exactis.com Inc. in Denver. ■

BRIEFS

AT&T Inks Cable Deal

Even as long-distance phone giant AT&T waits for its pending acquisition of Tele-Communications Inc. (TCI) to close, it has plunged ahead into another cable deal—a joint venture with Time Warner Inc. to offer local telephone service in 33 U.S. states via cable television lines. The two companies said they expect to test the AT&T-branded service in one or two cities by year's end and to offer it commercially next year.

Display Prices to Rise

During the next six months, the world's top makers of thin-film transistor LCDs will raise prices—in some by nearly 30%—in an effort to bring their screen businesses back into the black, the ITO News Service reported from Tokyo. But price-conscious PC makers won't be able to pass the higher costs along to customers in products such as notebook PCs or flat-panel displays, said Abhis Mehta, an analyst at International Data Corp. Japan Ltd.

Study: High-Tech Mergers Often Lead to Paralysis

'Cultural issues' need attention

BY STACY COLLETT

During the glitzy announcement of a high-tech merger, shareholders often are promised a big payoff as stock prices soar. But after the

hoopla ensues, it's often the customers who pay a hefty price as the merged company is paralyzed by new-product delays, stalled sales and restless top talent looking for the exits.

Some 50% to 70% of high-tech acquisitions suffer these potentially fatal consequences, according to a recent study by the management consulting

firm Hay Group Inc. in Philadelphia. The problem is that companies don't have a plan to retain the hot technical talent they need to make the deal work, the study said.

"While the business development group does financial and technology due diligence, there's very little 'people or cultural due diligence' before the letter of intent is signed," said Art Geis, Hay Group's director of high-tech industry consulting in San Francisco. "When the deal closes, there's no staffing plan to hand off to the new operations managers."

Companies that have chinked up high-profile acquisitions recently—such as Microsoft Corp., IBM, Cisco Systems Inc., Sun Microsystems Inc. and America Online Inc.—took part in the study along with high-level executives at 60 other high-tech firms.

Less than one-third of the high-tech executives surveyed said they felt they had done a good job at "cultural due diligence" before a merger. And three-quarters admitted they didn't place the right people in

the right roles after the merger.

For example, one Hay Group client recently acquired a smaller technology company because it could turn research-and-development projects into products 25% faster than the larger company. But after the acquisition, the parent company placed layers of bureaucracy and risk-averse managers over the R&D unit. "So they squelched the thing they were purchasing," Geis said.

Sticky Merger Muck

During the lengthy negotiations before a merger or acquisition is finalized, many firms suffer some paralysis. "People just stop," said Lorraine Segil, author of *Intelligent Business Alliances*. "They'll start pushing [critical work] further out or shelving it. If things don't get sorted out in a reasonable amount of time, it could affect productivity."

The trend is for companies such as Cisco and Sun to put human resources professionals on the development teams that spearhead acquisitions, according to the study. ■

Hitachi Buys EDS Stake

Hitachi Ltd. announced that it will buy Electronic Data Systems Corp.'s stakes in Hitachi Data Systems Corp., which was formed by the firm in 1988 to sell and service Hitachi mainframes and storage products. Terms of the agreement weren't disclosed, but parent Hitachi will assume full control over Santa Clara, Calif.-based Hitachi Data Systems no later than April 21.

Hot Prospects

Projected 1999 growth*

- Printed circuit boards **10%**
- Semiconductors **12%**
- Computers and peripherals **6%**
- Telecommunications equipment **6%**

*Growth in the value of industry shipments

SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS

Culture Clash

High-tech executives acknowledge they haven't handled the 'people issues' of mergers very well

- 74%** Said they didn't do a good job of placing the right people in the right roles during the merger
- 28%** Said they did a good job of assessing the culture of the merger partners before a deal
- 15%** Said they successfully communicated the combined companies' vision and goals after the merger

SOURCE: SURVEY OF 60 HIGH-TECH EXECUTIVES; MULTIPLE RESPONSES ALLOWED

ILLUSTRATION BY JEFFREY M. HARRIS



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PAUL GILLIN

Y2K escape clause

FACED WITH an almost certain flood of year 2000-related litigation, industry groups are banding together to try to limit their liability. Users should oppose those efforts with all their power. This legal debate is tricky because the combatants are equally opportunistic and unpleasant. On one side is the Information Technology Association of America, in alliance with various other industrial groups. They have proposed a

law that, among other things, would limit punitive damages in year 2000 cases to triple damages and give defendants 90 days to fix a problem before being named in a suit. On the other side are lawyers' associations that anticipate a bonanza of fees, even if the year 2000 problem doesn't turn out to be that serious.

Hard as it is to find a good guy, you have to give the lawyers their due. Year 2000 may be their opportunity, but it isn't their problem.

The problem belongs — hook, line and sinker — to the vendors that capriciously ignored warnings from as long ago as the late '70s and that now are trying to buy a free pass from Congress. It's appalling to look at the list of recent software products that have year 2000 problems. It has been five years since year 2000 awareness washed over the computer industry, which makes it difficult



PAUL GILLIN is editor in chief of Computerworld. Contact him at paul.gillin@computerworld.com

to believe that products such as Office 97 aren't fully compliant.

The industry players behind this legislation package are the same ones that helped push through the Trojan horse called the Year 2000 Information and Readiness Disclosure Act last October. That bill provides vendors with a cloak of legal protection based on past statements about efforts to correct the problem. The industry players have tried to color the bills as reasonable hedges against frivolous lawsuits that will sap the legal system post-new year. Yet defendants in personal injury and class-action suits enjoy no such protections.

Vendors have had plenty of time to prepare for 2000. The fact that some were more preoccupied with quarterly earnings and stock options than in protecting their customers is no excuse for giving them a get-out-of-jail-free card now. ▀

DAN GILLMOR

Intel blew it on PC privacy, but the need remains

INTEL SET OFF a privacy firestorm with its recent announcement that it would embed network-trackable serial numbers into its new Pentium III chips. The company promoted the idea as a fine way to enhance electronic-commerce security, but privacy advocates focused on its Big Brotherish aspects. [CW, Jan. 25 and Feb. 1]

Intel has dug itself a hole with this plan and has shown again that major American companies are amazingly tone-deaf when it comes to understanding regular people and their worries. The chip-making giant could have made a better case if it had focused on the serial-number notion in large enterprises, where keeping tabs on information-technology assets is a serious chore. IT, in fact, should be thrilled with the scheme.

IT has long had a way to track computers and other equipment. Ethernets nodes have ID numbers, after all. And there are identifiers in workstations from companies such as Sun and Hewlett-Packard. Again, this makes sense in the enterprise.

But it's a red flag for consumers, who want privacy and security. Intel is telling us we can't have both. That's bull, and Intel knows it.

At least Intel backed off from its original stance, by making the default condition for the serial numbers be "off." Computer users will have to turn them on before the network can query them. Perhaps, as one cynic suggested, this was the company's long-planned fallback position, though I suspect Intel was genuinely surprised by the reaction.

But as critics have noted, the ID scheme has some fundamental flaws. "The basic problem is there's no secure way of querying the number, so you have no verification the number is accurate," cryptography expert Bruce Schneier told Computerworld last week.

IT will come under pressure from marketing in many enterprises that have Web presences or sell products online.

The pressure will be to force customers to turn on their chip IDs so they can transact business. If you do, be prepared for trouble. The same organizations that are promising to boycott computers using the Pentium III will likely look askance at



DAN GILLMOR is technology columnist at the San Jose Mercury News. Contact him at dgillmor@sjmercury.com



companies that use the IDs.

One of the chief ironies in this brouhaha is the setting for Intel's announcement: the annual RSA Data Security Conference, held last month in San Jose, Calif. The initials RSA stand for a technique for public-key encryption.

Public-key cryptography provides an extremely safe way to send information plus a way to verify who sent it. A robust public-key infrastructure would do more for electronic commerce than all the chip serial numbers, but law-enforcement agencies don't want strong cryptography to become ubiquitous because they fear criminals could shield their communications more easily.

IT will do us all favor by using the Pentium III serial numbers internally only and pushing hard for the public-key infrastructure everywhere. That, not Big Brotherism, is the way to achieve security and privacy. ■

DAVID MOSCHELLA

AOL is wrong to lobby for cable Net regulation

A LITTLE ADVICE to America Online: There's no way the U.S. government will or should require cable TV companies to open up their networks to you and other Internet service providers. So save your PR campaigns, lobbying budgets and political chits for more winnable battles. This one's a loser.

The Federal Communications Commission has two priorities: to nurture real competition at the local level and to accelerate the deployment of broadband capabilities. Enhanced cable services currently are its best hope for achieving both goals, but only if cable vendors invest billions to upgrade their networks.

Because consumers are responding favorably to high-speed cable modem services, this investment is finally starting to happen. The last thing the FCC should do is cloud

the financial picture by regulating cable companies as if they were local telephone suppliers.

That's exactly what we're trying to get away from.

AOL says government intervention is the only way to avoid having a few companies control the high bandwidth pipes to the home. This could eventually prove true.

But today, AOL has far more Internet market

share than all the cable companies put together, and any worries about what things will look like in five years are pure speculation. It's not the FCC's job to divine the prospects for cable, modems, DSL and wireless broadband. That's for the market to decide.

AOL does have good reason to be concerned. It's not at all clear how it will fit into the high bandwidth world of the 21st century. But this uncertainty is inherent in the very nature of the Internet service provider business.

AOL has done a great job of making it easy for consumers to get on the Net, but its dependence on other company's wires has always made it vulnerable to changing transmission technologies. Brand development and ease of use don't constitute a long-term technology strategy.

Much has been made about @Home's plan to purchase Excite. The fear is that cable companies will favor their own content providers and shut out others.

Well, maybe, but it's at least as likely that any such efforts will prove counterproductive. My guess is that cable vendors will be better off copying the early strategies of Microsoft and Intel by positioning themselves as relatively neutral technology providers.

No one really knows, but when companies as diverse as Disney and @Home are both buying

portals, you can be sure that the market's direction is far from settled.

Politically, AOL is in an extremely weak position. For years, the Internet community has asked Washington to leave the community alone, and Washington has complied: It has granted the Internet community a critical moratorium on taxation, a guided-flight experiment in privacy self-regulation, looser policies on encryption, etc.

Given Washington's hesitant support, it's neither a pretty nor impressive sight to see a market leader like AOL cry out for government help the first time changing technologies appear to work against it.

Understandably, the online community thinks highly of itself.

But sometimes pride comes across as arrogance, and sometimes arrogance leads to a sense of entitlement.

Internet companies like to talk about industry convergence, but what they usually envision is more a takeover of all those stodgy cable and phone types. This is unlikely.

In an increasingly network-centric era, isn't it only natural that the actual network owners should emerge as big-time players? Local bandwidth is key, and AOL and other Internet service providers don't have it. That's not Washington's problem; it's AOL's. ■

READERS' LETTERS

More predictions for 1999 and beyond: The bike makes a comeback, Linux doubles its user base

DEC. 31, 1999, 11:50 p.m. will be the start of the following trends as the age of year 2000 is ushered in ["Predictions for 1999: Pyrrhic victories abound," CW, Dec. 14]. These trends will be children resulting from that event:

- Families will return to their nuclear structure with multiple generations in one household at first for survival, but then people will find it a better way to live.
- A hard day's work will take on new meaning.
- People will read more and learn to play more.
- Kids will actually be seen outside again.
- Agriculture, gardening, hunting and fishing will be extremely popular.
- Religious faith will increase.
- Conservation and recycling will become

commonplace.

- Inventions will increase.
- The bike will make a big comeback.
- Neighborhoods will become communities again.

Dave Shattuck
Albany, Ohio
shattuck@bright.net

I JUST READ "Predictions for 1999: Pyrrhic victories abound" and must say you will be eating your words concerning Linux.

Linux is much different from all the other technologies that have come and gone.

I have been using Linux servers in mission-critical systems since early in 1994. I now have over 30 Linux systems installed, and I am installing two to three new systems a week.

We have evaluated NT

4.0 several times and have been very frustrated with poor performance and stability problems. Windows 2000 will have to be truly amazing to even make a dent in the growth of Linux.

Jeff Myers
Systems analyst
Web Point Communications
Rocky Mount, N.C.
jmy@wpc.net

AFTER READING Bill Labrec's predictions for 1999, I felt tempted to offer you mine.

Regardless what happens with Microsoft's "forcing" Microsoft to port its vanguard to other platforms is a possibility, Linux is going to double its user base, thus exceeding 20 million by the end of 1999.

NT updates will decrease dramatically,

and Unix will pick up more sales than ever. Unix administrators will be in great demand.

The very last one: Linux will be adopted by every major Unix vendor (IBM, Sun, Hewlett-Packard and Digital/Compaq) as a workstation and/or desktop OS, while they will maintain their own flavor of Unix on the server side.

Give Linus a chance.

Ernest Pecunias
Database administrator
N.C. Dept. of Environment & Natural Resources
Division of Water Resources
Raleigh, N.C.

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DAVID MOSCHELLA is an author, independent consultant and weekly columnist for Computerworld. Contact him at: davidm@compuserve.com

LENNY LIEBMANN

TCO is a bad measurement tool; use this instead

THE total-cost-of-ownership concept has been very useful in bringing IT out of denial. Distributed computing turned out to be a very expensive proposition, and gaining a better sense of how much money has been sucked up by PC ownership has helped to mitigate desktop madness. But the repercussions of TCO-mania should go beyond slightly saner PC management practices. In fact, TCO really offers a very primitive view of technology spending and needs to be replaced by more sophisticated IT financial metrics.

Here's why:

The myth of the TCO benchmark: People talk about TCO as if there were some magical benchmark that IT managers could use to determine how well they're managing desktop costs. That's absurd. A software development firm with revenue-per-employee (RPE) of \$400,000 obviously has legitimate business reasons to deploy PCs that are twice as expensive to operate as a widget maker with RPE of \$200,000. So the fact that the "average" cost of owning a PC over its life cycle is X is meaningless.

PC ownership costs depend on how they're used. Does anyone care what the average salesperson's salary is? No. We care about how much they sell and are willing to adjust our "salesperson TCO" accordingly.

The irrelevance of resource-specific TCO: Who really cares what it costs to "own" a PC anyway? Do factory managers talk obsessively about the cost of owning a die-stamping machine? No. While they certainly control their maintenance costs, what they're really interested in is the total cost of producing goods.

Similarly, in IT, life shouldn't revolve around the cost of a PC. But it should revolve around the total cost of delivering SAP's R/3 to the user. Yes, that cost includes some prorated portion of the PC cost — just like the cost of goods in the industrial model includes prorated expenses such as factory floor space.

What IT really needs to do is figure out the per-unit cost of specific end-to-end services. After all, a PC by itself doesn't really have any return on investment (ROI), but an enterprise

resource system does (or should).

Lower TCO doesn't mean higher ROI: This is a classic error. The assumption is that if you whittle down the cost of a resource, it will provide a higher return on investment. Not if I buy a cheap used car and lose my job because I can't get to work reliably, did I really save money? Sure, IT must control costs, but not through some arbitrary goal that isn't linked to real business drivers.

As an alternative financial metric for IT, I suggest a service- and/or application-specific seat-cost as a percentage of revenue per employee, or SC/RPE (pronounced "scrape" in deference to the buzzword gods). SC/RPE is better than TCO in two important ways:

- It deals with the cost of delivering real services as opposed to out-of-context resource costs.
- It incorporates the actual financial activity supported by the computing environment — thereby adjusting itself to businesses with very different profiles. Alignment of IT with the business is contingent on the alignment of IT spending with business goals. SC/RPE is a much better metric for that spending than TCO, because it measures real services in their real context.

TCO is dead! Long live SC/RPE! ■

MICHAEL SCHRAGE

Finally, an honest assessment

THIS IS MY last regular Computerworld column. Not to worry: I loathe nostalgia and sentiment. But as I ruthlessly scanned my columns over the past seven years, certain recurring patterns, themes and questions swarmed into clarity. This newly heightened field of focus recalled management theorist Karl Weick's delightful phrase "retrospective sensemaking," which describes what happens when you take a good look back, review the decisions you made and the chances you took and, from the vantage of where you are, suddenly realize, "So that's why I did what I did — of course!"

So this final column is my mindless stab at retrospective sensemaking: So that's why I wrote what I did. I always tried to write about what I thought was most important for people in this field to fear and/or embrace and/or confront. Here's what I freidiscussed:

The rampant dishonesty: The most important problem facing this community is rampant dishonesty. We lie about schedules; we lie about features; we lie about functionality; we lie about

budgets; we lie about costs; we lie about measurements; and then we lie about how much we are lying.

To be sure, we often lie with the best of intentions — to protect and to please — but let's not kid ourselves: Dishonesty has become a management ethic. We lie and then complain we aren't perceived as credible.

Even worse, our colleagues and clients subsidize our culture of dishonesty with unrealistic deadlines, silly budgets and foolish commitments to customers and clients. They prey upon what's left of our integrity with expectations so bizarre they might be laughable if we actually had the wit and courage to laugh.

The cure? The glib answer is a willingness to be fired or leave given that, economically, times have never been better. The real answer? Wouldn't you really rather be thought of as someone whose word and commitments should be taken seriously?

The rise of choice: The most important opportunity facing this community is choice. In less than a generation, this industry has gone from an expensive wardrobe of computational straitjackets to a Wal-Mart of customizable digital attire suitable for and scalable to practically any size or need. We have more choices than we know what to do with.

But the more choices we have, the more our values matter. Solving immediate problems must be balanced with preserving tomorrow's opportunities; empowerment must be balanced with quality control; flexibility must be balanced with consistency.

Increasingly, technological choice forces organizations to confront ever-harder, nontechnological choices. The questions shift from "What should we choose and why?" to "How should we manage choice? How should we choose to choose?" Technologists who get to answer only the first question are servants — not partners — of top management.

The trade-off challenge: The most important challenge facing this community is assessing, calibrating and making trade-offs. To an era of abundance and outsourcing, choosing what not to do is every bit as important as choosing what to do better than anybody else. More choices breed more trade-offs breed more options for honest confrontations with opportunity and risks. Or they breed even more deeply dysfunctional relationships and pathological lies between purported professionals. Virtuous circle or vicious cycle?

The single most important thing I learned writing this column is that the real value of all these digital innovations and networks lies less in the information that they carry than in the relationships they create.

Whether we like it or not, we are all in the relationships business — and relationships are less about science, technology and methodologies than art, craft and respecting people even as you wonder why they do the things they do. I thank all the readers and editors who took the time and care and thought to remind me of that lesson. Good luck. ■



LENNY LIEBMANN is a partner at PRA, a Highland, N.J.-based IT consulting firm. Contact him at lliebmann@pra.com.



MICHAEL SCHRAGE is a research associate at the MIT Media Lab and columnist for *Forbes*. Contact him at mschrage@media.mit.edu.

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What most Web sites and other systems lack isn't engineering, it's

design. Tech developers should hire consumer product designers, who focus more on usability, Peter G. W. Keen advises. But be ready to welcome, not just tolerate, diverse approaches. » 58

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OPEN LINES OF COMMUNICATION

Good project plans are a must, but good communication plans are what keep a project on track. Figure out who needs to be kept in the loop, how they want to receive updates and whether you're the best one to carry the message. » 62

THE AGE QUESTION

Older workers claim there's rampant age discrimination in IT—and employers do seem to seek mainly the twentysomething wunderkinder. Recruiters counter that skills and attitude are paramount. But many concede that experienced workers' high salary demands hurt their chances. » 65

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USERS: YOUR NEXT HIRE?

Geoff Jue is living proof that end users can make the best IT people. He's part of a growing wave of experienced businesspeople who see a move to IT as a way to make more of a difference to the business. IT managers are finding that the intimate knowledge of the business and its customers that users like Jue bring can make the whole department more effective.

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FINDING A RICH NICHE

Insurer's data mining system helps target profitable areas for new business

BY THOMAS HOFFMAN

DATA MINING tools have long been used by retailers such as Wal-Mart Stores Inc. and banks such as Charlotte, N.C.-based First Union Corp. to identify their most profitable customers. Insurance companies, though, have had other priorities, such as figuring out which markets to stay in.

But now, some are using the tools to identify marketing opportunities to meet heightened competition.

Farmers Insurance Group in Los Angeles is one of them. It has developed a system for its underwriting business that's generating millions of dollars in higher revenue and lower claims.

"As competition has gotten more intense in the insurance

industry, the traditional ways of segmenting risk aren't good enough at providing you competitive advantage," explained John Boardman, an assistant actuary at Farmers.

Shining Light

Farmers' system should help the company's actuaries dig deeper into its customer base and understand narrower market niches and uncover hidden loss predictors, Boardman said.

For example, the company was recently able to identify how insuring a certain type of high-risk sports car could be quite profitable as long as the owner had at least one other vehicle.

After analyzing reams of customer policy information, Farmers discovered that it could lower its rates on the

sports car's coverage and increase its market share in California and a few other states "by a couple of percentage points," said Melissa McGrathney, vice president of business development for Farmers' personal lines products.

She declined to specify costs or revenue from the system, beyond saying that the revenue increases are in the millions.

Previously, Boardman and other actuaries would develop hunches about market trends — that policies for two-door convertibles are going to be more profitable than policies for two-door hardtops, for example — and put a request into the firm's information technology department "to dig



FARMER'S MELISSA MCGRATHNEY says finding and scrubbing customer data from up to seven databases "was a huge undertaking."

up that data to prove or unprove those hunches," he said.

Farmers began to develop the customer profitability analysis system with IBM in late 1996. IBM, in turn, began to sell a customized version of the system, called Decision-

Edge for Relationship Marketing Insurance, to other insurance companies in November.

Still, McGrathney acknowledged that developing a decision-support environment from seven databases and 35 million records was a huge undertaking.

For example, because the records were spread across so many databases, locating a customer file often became a major initiative, she said.

That's why locating and scrubbing all of the customer data needed for the data warehouse took four months — or twice as long as Farmers expected.

Analysts said the amount of time needed to scrub and reformat data for use in a data warehouse varies, based on the amount and quality of data.

But, they added, the amount of time it took Farmers to scrub its data seemed reasonable. ▀

When Overseas Partners Aren't Technology-Equipped

Engine firm jumps hurdles, saves \$1M

BY THOMAS HOFFMAN

Electronic commerce can do wonderful things: streamline supply-chain activities, speed inventory turnover and reduce cycle times.

But for companies with suppliers and business partners in places like Japan and China, where trade restrictions are tricky, sometimes it takes in-country knowledge, diplomacy and resourcefulness to get the job done, analysts said.

Cummins Engine Co., which has been doing international business electronically since the early 1980s, has carried its stripes the hard way in those regions but is seeing a hand-some payback.

Only 100 of Cummins' international customers — representing just 25% of its international revenue stream — are able to transmit orders and re-



CUMMINS' ED HUBBARD says it has saved \$1 million in the past five years by transmitting international customer invoices electronically.

ceive invoices electronically. The slow adoption rate overseas "is still an issue," said Ed Hubbard, director of electronic commerce at Cummins.

To work through individual business and government requirements for electronic-commerce adoption, Hubbard recommended a face-to-face communications.

With trading partners, especially when there are language differences, for example, Cummins recently fielded a request from a Japanese customer who had asked for 10 copies of four documents to be sent electronically. Representatives from Cummins met with the customer to discuss the requirements to make sure that was what the customer wanted.

"When you can both identify what data you've supported, you can identify the most effective way to transmit that

data," Hubbard said.

Another way to sell electronic commerce is to find trading partners who are willing to install, say, electronic document flow capabilities and demonstrate them to other customers. Hubbard said he kept track of best practices in electronic commerce to share with trading partners.

"Demonstrations help users understand the benefits. Best practices reinforce commonality," said Hubbard, a six-year electronic-commerce veteran.

Your Bottom Dollar

Cost savings are a good selling point, too. Cummins has been using Dublin, Ohio-based Sterling Commerce Inc.'s Commerce: Network system since early 1995 to handle 80% to 90% of its 40,000 weekly electronic data interchange (EDI) transactions. It has booked more than \$1 million in direct savings during the past five years by slashing customer costs and sending customer invoices electronically.

Cummins' electronic-commerce penetration with international suppliers and customers is about 20 percentage

points above average for the automotive industry, says Bob Parker, research director at AMR Research Inc. in Boston. For example, 50% of Cummins' engine orders to the U.S. come via EDI, vs. about 30% for other players in the U.S., Parker said. ▀

SNAPSHOT

Stay the Course

CIO hiring plans, Q1 1999



Base: 12,111 managers of companies with 100 or more employees.
Source: Computerworld/CIO Survey, February 1999.

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Cummins Engine Co., which has been doing international business electronically since the early 1980s, has earned its stripes the hard way in those regions but is seeing a handsome payoff.

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SNAPSHOT

Stay the Course

CIO hiring plans, Q1 1999



SOURCE: META GROUP, "CIO HIRING PLANS," FEB. 1999



82% of companies AREN'T PREPARED
to handle a computer system disaster:

[Care to know if you're one of them?]

Computer system disasters cost companies millions. Indeed, it can lead to the company's destruction. What, you may ask, can assure your company's survival? Only an airtight, proven data backup plan. An essential ingredient of which is DLTtape technology, the industry standard in reliable tape backup systems. And DLTtape system vendors, working in conjunction with a number of disaster recovery experts, can provide you with the information, tools and expertise you need to survive a catastrophe. To find out how secure your company is, visit us at www.DLTtape.com/Prevett! or call 1-888-DLTtape.



*Comscore 1997 Survey only

FOR THE BOOKSHELF

A handful of new titles for IT professionals By Alan Earls

Executive Temping - A Guide for Professionals

By Suzanne Terry Woods
John Wiley & Sons Inc.
New York, 1998;
228 pages; \$16.95,
paperback

Executive Temping provides a broadbrush overview of opportunities in a variety of career fields, including information technology.

Despite the book's title, the emphasis is primarily on professionals with advanced skills — not on those seeking executive positions.

Unfortunately, however, none of the sections provide much depth.

Indeed, most professionals in a given sector will probably already have about as much understanding of the "temping phenomenon" in their corner of the world as Woods provides in this book.



The Consultative Approach: Partnering for Results

By Virginia LaGrossa and Suzanne Saxe
Jossey-Bass Inc./Pfeiffer
Publishing Co., San Francisco,
1998; 190 pages; \$16.95,
hardcover

Despite its title, *The Consultative Approach* isn't aimed at

consultants, though they probably will find it useful. Rather, it's targeted at professionals in general.

Its main thesis is that the world of work has changed. Professionals are no longer expected to merely deliver specific expertise — they're expected to deliver solutions that help the business.

And that means having the skills needed to identify problems and gain input and cooperation from others.

This is what Saxe and LaGrossa call the "consultative approach."

IT professionals — with their increasingly central role as problem-solvers — will find this well-researched and well-

organized book useful and instructive.

What LaGrossa and Saxe offer are lots of examples from the real world as well as thoughtful commentary about how to remake one's skills, workplace and colleagues into the new business mold.

Work & Rewards in the Virtual Workplace - A New Deal for Organizations and Employees
By N. Frederic Crandall, Ph.D., and Marc J. Wallace Jr., Ph.D.
Amacom Books, New York,
1998; 258 pages; \$27.95,
hardcover

Are you managing a virtual workforce?

Or are you perhaps part of one? *Work & Rewards in the Virtual Workplace* provides a handbook for thinking about the complex new management issues raised by technological and social

changes. Although many of the results of this new way of working are positive, the management challenges are enormous.

For instance, it's commonplace for a manager to encounter a direct report in person on only rare occasions.

Work & Rewards in the Virtual Workplace provides a textbook approach to adapting management outlooks and methods to these new challenges. The authors have talked to a wide spectrum of real-world practitioners, so their suggestions have a ring of truth.



Work Less, Make More
By Jennifer White
Kendall/Hunt Publishing,
Dubuque, Iowa,
1998; 167 pages; \$25,
hardcover and

CD-ROM

With a title that's bound to



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provoke a, "Yah, right," reaction from most any healthy cynic, *Work Less, Make More* has its work cut out for it. Still, after a few pages, Jennifer White's daring premise begins to make more sense. White is a "personal coach" who works with individuals to "maximize their achievements."

In a nutshell, she argues that most people play the work game by someone else's rules. As a consequence, they may not make the best use of their skills and other personal attributes.

But like any effort with such lofty ambitions, the 10-point plan promises more than it delivers. Yet White offers many thought-provoking — even inspiring — insights. If you're ready for some fresh career thinking, check out *Work Less, Make More*. ▀

Earls is a freelance writer in Franklin, Mass.

Mix-and-Match Training Is on the Horizon

Proposed standards could end need for customization, proprietary front ends

BY BAZZ COLE-ROMOLSKI

Pressured by companies tired of building training courses from scratch, the training-software industry is developing standards that will let customers build courses out of reusable course components.

Efforts are under way by a handful of groups, but the standards work is expected to come together next year under the auspices of the Institute of Electrical and Electronics Engineers Inc. in Washington.

"We want reusable and sharable [training courses] so we can stop reinventing the wheel," said Annette Crowley, a senior training analyst at 3M

Co. in St. Paul, Minn.

3M has tried to streamline training with a set of company standards for course development. However, an industry-wide push toward standardization would give the company more choice in the products it selects, Crowley said.

One standard in the works defines a format for cataloging learning objects — components that contain training material — so they can be found by search engines. The IEEE is developing an interoperability specification so courses built with disparate training tools can work together.

"The bottom line," said Bill

McDonald, an advanced computing technologist, "is that I will be able to go down to the store and buy off-the-shelf courseware and run it with my favorite [training] management system" without having to customize it. McDonald is employed at FlightSafety/Boeing Training International, a Seattle-based joint venture of Flight Safety International and The Boeing Co. that sells training systems to airlines.

Today, courses are still largely built from scratch and are proprietary, he said. Many training development systems still require proprietary client software to run courses, whereas learning objects — as defined in the specifications — will run in Web browsers.

"A lot of [companies] spend millions of dollars developing

JUST THE FACTS

Training Spec

Defined points in the first IEEE specification on training software

■ What is a course?

■ How are courses organized?

■ How should courses be handled with course-management software?

■ How should information flow between course-management software and lessons?

■ How should student performance information be reported?

content with a certain training tool," McDonald said. "Then, when the authoring tool company goes out of business, they're screwed."

The specs also should give users more flexibility in buying courses, said Doug Upchurch, executive director of the Information Technology Training Association in Austin, Texas. ▀

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WEB RETAILERS TRY TO KEEP THEIR HITS UP

Customer retention — via marketing, promotion — will be even bigger this year

BY SHARON BAGLIS

WITH THE cost of acquiring new customers on the Web running an average of \$34 each (according to a survey by The Boston Consulting Group last year), online retailers are increasingly focusing on getting customers to keep coming back.

Some sites are beefing up E-mail marketing and personalization; others are instituting loyalty programs to entice shoppers to make repeat buys.

"You're going to see a lot more focus on retention [this year]," said Elaine Rubin, vice chairman of the industry group Shop.org.

Cyberian Outpost Inc., for example, added a back-end system late last year to improve its ability to interact with customers.

Using software from Redwood City, Calif.-based Broadvision Inc. that can track user behavior and analyze patterns of activity, the online computer retailer can better target customers by geography, demographics, past purchasing habits and other attributes.

Generating Interest

Cyberian used that type of data to design two direct E-mail promotion offers whose response rates "substantially" exceeded 3% (considered a good response rate), said Lou-

Stay With Us

How to boost customer loyalty at your Web site

- Targeted E-mail
- Personalization
- Frequent-buyer loyalty programs
- Special offers

ise Cooper, vice president of worldwide marketing at the Kent, Conn. company.

Fort Washington, Pa.-based CDNow Inc. — whose Web site was ranked as the eighth most-visited shopping site in December by Media Matrix Inc. — launched a frequent-buyer program in October, giving shoppers points for purchases, which they can redeem for merchandise. In the third quarter of last year, 59% of the

site's customers were repeat buyers, according to Samantha Liss, director of brand marketing at CDNow.

In addition, the music seller has started to use Net Perceptions Inc.'s GroupLens "recommendation engine" to generate suggestions about what additional music a shopper might like. Such software, also known as collaborative filtering, looks at a user's tastes and purchasing patterns and tries to match them to patterns of choices made by others.

So if many CDNow shoppers who buy Dinah Washington discs also buy Ella Fitzgerald, the system might recommend Fitzgerald to the next shopper who asks about Washington.

The retailer also uses personalization to let users customize the site for their tastes.

BurnsIndo.com also is working with Net Perceptions

this year to enhance its personalization features, said spokesman Benjamin Boyd. And the bookseller just expanded its optional E-mail announcement program, which allows users to request mailings about new titles in particular categories or by certain authors. This month, more categories are available and more news content is being sent out, Boyd said. The New York-based retailer doesn't disclose particular results of its programs.

In addition to implementing marketing programs that entice customers to return, Internet retail executives say they also must keep focused on such basics as customer service and strive to maintain sites that are well-designed and offer good response times and easy navigation.

"Most sites are rife with what we call 'rot holes,' or places where users have nowhere to go except to reverse course and click back out from where they entered, said Chip Perry, CEO and president of AutoCarnegie LLC, which operates a site that offers information about used cars. ■

Software Will Let Customers Book That Oil Change Online

Some car dealerships hope package will keep service customers coming back

BY BOB WALLACE

Some auto dealers have found a new way to use the Internet: They plan to allow customers to schedule service appointments through the dealership's

Web site and E-mail.

That's one feature of new car maintenance software designed to help dealers retain customers who patronize their highly profitable service businesses. Jerry Brown Chevrolet in Buford, Ga., was among the first to sign up for it.

"We do business in an area where 70% of [people] have PCs, so we expect to increase our service-shop business while providing a benefit to our customers," said Nelson Neal, general manager at Jerry Browns. The dealership

also is seeking to increase its 60% service retention rate, he added.

Interval Inc. in Santa Monica, Calif., developed the software, called Service Advisor Plus. The Web-based package will ship next week. It will be sold to dealers by Atlanta-based Automobile Protection Corp. (APCO), an automotive products marketer. APCO said the auto industry is accustomed to service retention rates of 30% or less and retention rates decline even further once the car's factory warranty expires. It said the software could change that, in part by forging an electronic bond to the dealer.

"Anything that keeps an organization in the consumer's mind improves that organization's chances of getting repeat business," said Ron Zemke, author of *Delivering Knock Your Socks Off Service* and president of Performance Research As-

sociates in Minneapolis.

A few companies outside the auto industry, including Feder-

does nothing, saving on printing and mailing costs.

The \$30 Interval software, which APCO recommends dealers provide free to customers, typically contains the dealer's logo and a picture, as well as Web site and street addresses and a map.

The dealership has eight pages in which to provide additional data. The vendor charges a one-time, \$1,000 fee for loading the information onto a CD, which the dealer then copies and distributes to customers.

The customer loads Service Advisor Plus on a PC and keys in vehicle data, the date and his expected annual mileage. A special screen automatically pops up when it's time for service on up to five vehicles. The screen provides a link to the dealer Web site.

Appointments can be booked via the site, depending on arrangements made by the dealer. E-mail is an alternative. The software contains discount coupons, which customers can print out. ■

SNAPSHOT

Holiday Traffic

Top shopping Web sites, December 1998

Web site	Visitors*
Hotmountainarts.com	2.3M
Amazon.com	1.3M
eBay.com	5.9M
Barnes & Noble	4.7M
eToys.com	3.8M

* Includes multiple visits under two consecutive calendar days. Based on Nielsen measurement of 40,000 people in U.S. homes and businesses.

SOURCE: NIELSEN MEDIA RESEARCH



SERVICE ADVISOR PLUS helps customers stay up-to-date with car maintenance

al Express Corp. and United Parcel Service of America Inc., use software designed to build brand loyalty and boost customer service, as Service Advisor Plus was designed to do, Zemke said.

Today, dealerships sometimes call on the phone or mail announcements when it's time for customers to bring their cars in for service. With Service Advisor Plus, the dealer

IT HYBRIDS: YOUR NEXT, BEST HIRE

They know the company, its culture, and you've already won their loyalty

BY BROWNYE FRYER

RUSELL ALDERMAN, a onetime business analyst and technical writer at \$12 billion United HealthCare Corp. in Minnetonka, Minn., began looking for a new job when his old one was phased out. Today, Alderman is a mainframe programmer in the company's billing operation. Peggy Wong, a former political science major at Furman University in Greenville, S.C., is also a mainframe programmer at the company.

Steve Belli, a former reporter at *The Greenville News*, is also working at United HealthCare — as a computer software engineer in the corporate banking department.

For all three, it's their first job working in information technology, courtesy of the United HealthCare Mainframe Programmer/Analyst Track (MPAT) program. Says Wong, "It was great, because you

could start out from ground zero and have a chance to get into the field of programming." Surprising? It shouldn't be,

given the crying need for people with computer skills. Some firms are aggressively training nontechnical people in IT skills, with excellent results.

"We wanted to find a way to hold on to people and to increase the gene pool in IT," says CIO Paul Lefort, who manages a 2,500-person organization. Toward that end, United HealthCare founded its Learning Institute, designed to train people in IT skills.

Working closely with Rensselaer Polytechnic Institute in Troy, N.Y., United HealthCare trains people for one of four careers in IT. In addition to mainframe training in the MPAT program, employees can receive client/server, network administration and business analyst training. Last year, 38 MPAT graduates found jobs in United HealthCare's IT department.

Signs for the Picking?

Another company that trains nontechnical folk for IT positions is Pricom Systems Inc., a 1,200-employee IT recruiting and services firm in New York.

"Employees we hired who initially possessed little technical skill but trained heavily in specific technical areas are some of our top performers," says Pricom Chief Technology Officer Mike Petosa. As an example, Petosa cites a former purchase-order clerk who had created a small database on his PC. He was trained to install several database servers, and

"now he's getting the systems ready for deployment," Petosa says.

Although intense training is one way to expand the pool of IT talent, most companies absorb nontechnical personnel through a kind of osmosis. According to Gartner Group Inc. analyst Diane Tunick-Morello, the nontechnical people who serve as unofficial technology consultants most often move into IT jobs. And sometimes, "entire groups of people who have an affinity for technology but also know what the business needs eventually become interested in moving into full-time IT jobs," Tunick-Morello says. She calls those cases "fusion organizations."

Such a fusion organization is being created at PG&E Energy Services. A division of PG&E Corp., PG&E Energy Services is an unregulated retail energy services company that provides large companies with electric power. PG&E Corp. CIO John Keast — himself a former professional photographer who found his way into IT in the 1980s — says the company is interested in building increasingly close partnerships between IT and business. "I don't see how a CIO can be successful without a partnership with the business," he says.

For Keast, Geoff Jue is living proof of how such a partnership can work successfully. Jue moved into IT after 17 years in sales, marketing and manage-

ment at Pacific Gas and Electric Co., the regulated utility division of PG&E Corp. Jue, who has an MBA and an undergraduate degree in engineering, says he felt it was time to try something new.

"I recognized IT as the agent of change, and I could only go so far in adding value on the business side," he says.

In 1997, Jue began working in the IT department on a customer information management system based on Aurum Software Inc.'s Aurum SalesTrak. "I had no desire to go into IT until I started working in the Energy Services division," he recalls. "But working as a partner with IT here drew me in."

Today, Jue is the new director of customer relationship management systems at PG&E Energy Services in San Francisco. And he says he's thrilled with his new job. Jue manages a 16-person department of developers and programmers who are putting the finishing touches on a customer management system.

Jue confesses that he needs to know more about the technical details of the work being produced by his staff. But Keast says Jue has already strengthened his career portfolio considerably. "Geoff's a hot commodity around here," Keast says. "We need more like him." ▀

Fryer is a freelance writer in Santa Cruz, Calif.

AT A GLANCE

Talent Scouting

IT managers who are keeping an eye out for potential new talent should look for the following skills and attributes in nontechnologist candidates:

- **Enthusiasm**
- **Quick to learn**
- **Math proficiency**
- **Budgeting experience**
- **Logical thought process**
- **Communication skills**
- **Negotiation skills**
- **Problem-solving skills**
- **Business analysis experience**
- **Project management experience**
- **Operations experience**



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JOBSITE's international job listings are never more than a week old.

Job Sites With International Spin

BY LESLIE GOFF

IF YOU YEARN to follow in the footsteps of famous expatriates such as Hemingway or Fitzgerald, but you write code instead of fiction, don't despair. The IT skills shortage is a worldwide phenomenon. With the assistance of a few choice Web sites, you can scour the globe for information technology jobs on every continent.

Jobsite

www.jobsite.co.uk
Timely and far-flung listings make this international job search site particularly useful. The postings, which cover the U.K., Ireland, Austria, Belgium, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland and the Middle East, are never more than a week old.

To find IT jobs, click on IT & Computing or Jobs Abroad, both found under Search by Sector on the home page. In both sections, the job listings are exceedingly thorough and include detailed descriptions of responsibilities, contact information and the date posted.

The IT & Computing page will return jobs only in the U.K. and Ireland. A search form asks for a job title, up to three key skills, location (within the U.K.), industry and job type (permanent or contract). For the most returns, fill in only the job title and use a broad one. Recently, a search for "systems analyst" yielded

two jobs. A search for "database analyst" was a washout, but "project manager" turned up 60 positions.

The Jobs Abroad page links to all opportunities listed in Europe and the Middle East. This section is IT-centric not IT-specific, with jobs ranging from SAP consultants in France to Java developers in Luxembourg.

Overseas Jobs Web

www.overseasjobs.com
Get a job as a CICS programmer in Saudi Arabia or an IT manager in the country of Malawi in Southeast Africa at this site. It typically lists 30 to 40 IT jobs. Browse the database by category ("information technology" and "communications & telecommunications") are your best



TOP JOBS ON THE NET hunts some high-caliber employers

or to perform a keyword search. For instance, a search for "C++ or Unix or NT" yielded 14 employers with IT positions in China, England, the Netherlands, Switzerland and Saudi Arabia.

The job descriptions here are detailed but often lack a date, and a handful are a few months old.

Register at the site to post your résumé (in ASCII or HTML format). A Resources section links to more than 750 other worldwide job search and career resources. You can browse those exhaustive links by region or by industry.

Top Jobs on the Net

www.topjobs.net
This well-organized site, which features a very efficient search engine and high-caliber employers, focuses on the U.K., Ireland, Poland, Switzerland and Australia. A sixth page yields a handful of jobs in other locations.

From the home page, click on one of the six globes to reach the national page you want. Each page spotlights a handful of employers or news

on local employment trends. A pull-down menu at the top of each page lets you search by category. Click on Information Technology for an IT jobs search form. Then click Quick Search Now to see all IT jobs in that country or narrow your search by indicating a job category (for instance, analysis, SAP, development and so on), region, dates available and keywords.

Unfortunately, most of the job listings in some of the sections, such as Poland and Switzerland, are in the native tongue.

Most of the jobs on the International page are in Ireland and the U.K., with a few in other European countries. They appear to be updated weekly, but it's hard to tell how current they are, and some of the links are broken. Employers include Cadbury Schweppes PLC, Mitel Corp., Shell Oil Co., Avis Inc., Sony Corp. and UUNet Technologies Inc.

Escape From America

Overseas Jobs Page

www.escapeartist.com/jobs/overseas.htm
This site will send you all over the Web to find international IT recruiters, career sites, embassy pages, worldwide newspapers, immigration information and just about every resource you could possibly need to relocate abroad. The links are extensive, though unwieldy and frequently redundant. Three different links take you to the same Worldwide IT Jobs page, for example. Save some time by going directly to it at www.escapeartist.com/jobs32/jobs32.htm.

Goff is a freelance writer in New York.

EXEC TRACK



STEVEN K. BRAUN has been named head of Internet strategies at marketing/brand management at Aetna.

Retirement Services (ARS) in Hartford, Conn. ARS provides retirement benefit plans and financial services. Prior to the appointment, Braun worked at Aetna's Internet/Intranet division.

He was previously employed at Federal Express Corp., where he directed the development of the company's Web site, fed.com.



DAVID L. HAUSER has been appointed senior business consultant at Black Products Corp., a frozen food manufacturer in Buffalo,

N.Y. Prior to joining Rich Products, Hauser was manager of business systems at Fisher-Price in East Amherst, N.Y.



DANNY LEMEHA has joined Insigra/ISI Inc. in New York as CIO. Insigra/ISI is a commercial real estate services provider in the U.S. and the U.K. Lemeha was previously vice president of information services at The North West Co., a \$800 million retail firm based in Winston, Maine.

He's a member of the Canadian Information Processing Society and was named Chief Information Officer of the Year in 1995 by CIO Canada magazine.



NANCY MARKLE has been named CIO of the U.S. division of the professional services firm Arthur Andersen & Co. in Sarasota, Fla. Prior to joining Arthur Andersen, Markle was executive vice president and director of information services at Home Savings of America in Irvine, Calif.

Markle was named one of the Top 100 Women in Computing in 1996 by the McGraw-Hill Cos., publishers of *Business Week*. She's also a member of the Society for Information Management.



BRIEFS

Wells Fargo
Standardizes HR

San Francisco-based Wells Fargo & Co., which recently merged with Bancwest Corp. in Minneapolis, has decided to standardize the human resources management of its 100,000-plus workforce using software from PeopleSoft Inc. Bancwest had been using PeopleSoft, and Wells Fargo had been using another vendor's package.



Megal E-mail

Last month, antispam legislation was introduced in the Texas Legislature. Senate Bill 100 prohibits the sending of unsolicited E-mail and makes domain name forgery a crime. Similar legislation is being drafted in Maryland with the help of the online advocacy group The Forum for Responsible and Ethical E-mail.

Prefab Systems

Microsoft Inc. in Tempe, Ariz., announced a service that provides users with a "pre-engineered technology infrastructure," including PCs, desktop software and the network to connect them. The

package contains professional services and computing and networking products from Hewlett-Packard Co., Cisco Systems Inc. and Microsoft Corp. Monthly fees for the service range from \$250 to \$500 per user and include hardware leasing, software maintenance, network management and help desk services.

In-Person Trading

Members of the Chicago Board of Trade voted to abandon a proposed alliance with Eurus, a computerized, Frankfurt-based all-electronic exchange that is its fastest-growing competitor. The decision signals members' commitment to auction-style trading.

Online Auctions

Online business-to-consumer auctions will move \$3.2 billion worth of merchandise annually by 2002, New York research firm Jupiter Communications Inc. said last week. Auction purchasers in the U.S. will top last year's figure of 1.2 million and reach 6.5 million by 2002.

Sterling Signed

Sterling Commerce Inc. has announced that Fred Meyer Inc., a food and drug retailer with 800 stores in 12 Western states, will use Sterling's processing service to re-charge purchasing, invoicing and shipment status information with more than 2,000 suppliers.

Lack of financial resources	20%
Lack of staffing or expertise	20%
Need for employee training	20%
Time constraints	30%
Shopping cart with technology	30%
Interfacing with the business unit	30%
Year 2000	9%
Poor selection of products	5%

SOURCE: JUPITER COMM. INC. A REPRESENTATIVE OF RESEARCH FUNDING INT'L. FIGURES ARE IN U.S. DOLLARS. SURVEY PERIOD: JANUARY-DECEMBER 1998.

PETER G. W. KEEN

IT shifts to the
interface business

BEHIND A SIMPLE ELECTRIC OUTLET is a massive complex of equipment, connections, systems and activity. The same is true for the telephone and the most successful Web sites: There's a lot of IT behind the simple interface. Portals, AOL, intranets, electronic-commerce sites and other services are all instances of the interface being the system. They show that IT, similarly, is in the interface business now and must learn how to be superb at it. Of course, it must also manage the complexity

behind the interface: server traffic, inventory, delivery and other systems. IT is now increasingly handling what lies behind the interface through alliances, outsourcing and interconnecting to other providers.

Just as a power company's skills, priorities and experience are built on a view of electricity from behind the interface, IT has the same perspective. Looking from the outside in hasn't been its area of strength. It's been in the systems business. This makes it weak in areas that matter greatly for the systems' success, especially for electronic commerce and Internet offerings.

If IT organizations recognize those weaknesses, they're easy to remedy, provided the organizations let go of their old traditions. For example, a good interface provides for a natural, simple and appropriate interaction. But when programmers talk about design, they mean system features and think about graphical user interfaces, Java and "front ends." That technocentric thinking shows up in the rigidity and complexity of many Web sites. Programmers are ignoring what has to happen in the relationship between user and system to make it a true interface. Many Web sites, for instance, let you browse through online catalogs but make you place an order with a toll-free phone call. That complicates matters if you have only one phone line.

Making the interface the system begins with the design of relationships and interactions. The addictive Web auction site eBay succeeds because its interface is so simple and complete. The site lacks flashy multimedia. It's plain, even boring. But it reflects an elegant sense of rela-

tionship and interaction with a person. It makes the "system" invisible.

Interface relationship design is different from interface programming, and it's difficult for IT professionals to learn. It requires a strong focus on the relationship between user and system; programmers are interested in infrastructure and

technical systems design. Interface relationship design puts a premium on simplicity and flexibility.

IT needs to bring in as many real designers as it can — people who design consumer products, magazines, fashion items and promotions, those who have a strong sense of customer relationship, design and interaction.

If you design and implement with the interface as the central focus, much of the system can be outsourced or handled through joint ventures, systems integrators and alliances. The IT strategy should be to get rid of as much of the systems part while beefing up interface business capabilities.

These are obvious recommendations for IT strategy today. But there's a catch: Implementation requires diversity. IT is one of the least diverse fields in attitude and mind-set. But if you go into a TV studio, magazine publisher or arts company, you see workers whom IT people might just as "weird" or "flaky" — at least as business-

people stereotype IT workers as "nerds."

Creativity and diversity go together. IT is a very powerful culture that needs to adapt fast to an ever-shifting environment. ■

Keen is co-editor of the newsletter "You2K Now." You can visit his Web site at www.you2k.com. His Internet address is peter@peterkeen.com.

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thinking shows
up in the
rigidity and
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It's you and your supplier seated at a table. The issue: their Y2K readiness. Here's how to get them to open up

By Kathleen Melymuka

FACE TO



KEN PATTERSON is sick of year 2000 compliance surveys. "You send out the survey and what you get back is so vanilla you can't tell diddy," says the year 2000 project officer at Army & Air Force Exchange Services in Dallas.

Patterson has concluded that for getting crucial year 2000 information about essential business partners, paper surveys just don't cut it. As purveyor of "everything retail except groceries" to U.S. service personnel, the Army & Air Force Exchange is among the largest retailers in the world, but Patterson says year 2000 calls for the personal touch. So he has begun to sit down and talk one-on-one about year 2000 preparedness with the suppliers whose noncompliance could close down his business. "Nothing beats a face-to-face for the very critical ones," he says.

Although suppliers are the main concern, some companies are setting up one-on-ones with key customers as well. Either way, year 2000 summits are uncharted territory. "None of us knows how we should be doing this," one year 2000 manager says. But companies that have worked through some one-on-ones have lessons to share.

A Business Problem

First and foremost, they say, business partner compliance is a supply-chain issue and must be addressed by supply-chain people.

That may be the buyer, the purchasing agent, the account executive, the contract administrator — whoever has been the main contact with your business partner. "The guy in IS can't handle it," says Jeff Cripps, year 2000 pro-

ject leader for operations and strategy at the procurement and supply division at DaimlerChrysler in Detroit. "If something goes wrong on Jan. 1, and you can't get a part, are you going to call your IS guy? Probably not."

Year 2000 staffers should work with buyers to decide which partners you need to meet, to keep the number of one-on-ones as small as possible. "Travel is expensive, and more critically, it takes time," says Gary McGee, manager of the year 2000 project office at Cargill Inc. in Minneapolis, a trader and processor of agricultural goods.

Some year 2000 managers meet with key suppliers whose survey responses indicate they're in trouble; others target all top suppliers based on how critical their goods are to the business or sheer trade volume.

Buyers who have been dealing with suppliers all along should set up the meetings. Sometimes they can fold one-on-ones into the business routine. At DaimlerChrysler, for example, year 2000 readiness is on the agenda whenever buyers and suppliers meet. Only when routine discussions uncover problems is a special meeting set up.

At most companies, the buyer calls his counterpart in ask for the meeting and follows up with a detailed written agenda and requests for premeeting materials such as project plans and progress reports. That gets everyone in sync. "They're not coming in cold," says Bryan Murphy, enterprise program director for year 2000 at Canadian Tire Corp. in Toronto. "They have an idea what we want from them."

One-on-ones take time and resources from both sides, so be flexible, he adds. "Don't expect people to change their schedules to meet yours."

Carrot or Stick?

Many year 2000 managers are sensitive about prying into their partners' internal affairs. To avoid seeming like inquisitors, companies seeking meetings

often bill one-on-ones as opportunities for sharing information rather than one-sided question-and-answer sessions. "We say any question we ask you, you can turn around and ask Pillsbury. That sets the tone," says Gary Ferentchuk, a project manager at Raytheon Engineers and Constructors in Denver, which is providing year 2000 technical assistance at The Pillsbury Co. in Minneapolis.

For others, it's just business as usual. "In 14 years in the auto industry, I haven't seen a lot of diplomacy," Cripps

laughs, adding that because DaimlerChrysler has been paring its number of suppliers, those remaining are motivated to cooperate.

Guess Who's Coming?

Probably the most important premeeting consideration is who attends. Both sides should include at least the supply-chain contact and a senior person from the year 2000 office. Many companies also include an information technology person to handle technical aspects of the discussion and an opera-

CREDIT SUISSE First Boston's Colby S. Yocumsky (above) says face-to-face meetings with business partners can open the door to a lot of answers on Y2K readiness.

tions person such as a plant manager to handle business questions. "Make sure the right people are there or it's a wasted meeting," says Cathy S. Yesenosky, vice president and global year 2000 communications director at Credit Suisse First Boston Corp. in New York. "Clearly articulate your needs, ask who's coming and emphasize that you want people who can [respond]."

Legal staff often play a role in preparations, but because their presence would inhibit candid discussion, they almost never attend. "We want to manage this through the business," says Nancy J. Mitchell, senior business analyst on the year 2000 team at Pillsbury. "If we can provide uninterrupted service through year 2000, the legal issues

will take care of themselves."

Dedicated year 2000 one-on-ones usually take place at your partner's site. "It's more comfortable, and if they need additional information it's more accessible," Yesenosky explains.

What Does It All Mean?

Be ready to evaluate what you'll hear. "You'll always get information," Yesenosky says. "It's your interpretation of the usefulness of it that's important."

Reviewing the answers to your paper surveys is a good preparation because it gives you a feel for reasonable responses, she says. It also helps to schedule meetings with similar companies. "The ones that are obviously 'off' will come out at you," she explains. "Certain state-

ments will just ring false. It's harder to notice if you spread them all out."

Some of the information is somewhat, Ferencsak says. "If they bring in the head of IS and their manufacturing people, you know they have a pretty good feeling for what's going on, as opposed to a sales guy or somebody to talk in general about the Y2K problem."

The tenor of their comments will be telling as well. "Everyone has unique Y2K problems," he says. "[I]f they tell you about the unique problems they have discovered, that gives you the feel that they've been there. But if they haven't found anything unique, they haven't looked deep enough."

Troubleshooting

Generally, year 2000 managers say that the information coming from one-on-ones has been honest and meaningful, and they caution that vague answers may not mean partners are being evasive. "Perhaps you're not meeting with the right people," Ferencsak says. "Maybe they don't have the authority or understanding to work with you, so [you] might want to get a person with a different perspective."

But if a meeting really is stalled, look to the buyer to get things moving. "The person who owns the relationship needs to handle it — the same way they handle any concern about a supplier," McGee says.

If your business partner is clearly stonewalling, you may need to call in the big guns. Cripps has been known to ask his purchasing director to have a word with the president of a supplier company. "Normally, that's all it really takes to turn them around," he says.

But not always. "It's not necessarily the people in the room who want to be evasive," Murphy says. "It may be the instruction they're under."

In the end, a bad attitude may tell you all you need to know, Yesenosky says. "If you can't get a good comfort level, that's an answer in itself."

If a partner is clearly in year 2000 trouble, your buyer should decide what to do. That may mean going to an alternate supplier, stockpiling products or even leaving an area of business. To buyers, year 2000 is just another supply-chain challenge.

One-on-one veterans urge caution: In your eagerness to get good information, don't allow the meetings to degenerate into adversarial confrontations. Remember this is about communication, not retribution. "We've at least opened a path for future discussion," Mitchell says. "Something may go wrong, but they know we want to work together, and we're not waiting to take them to court."

Keep things in perspective, they say. "There is a future after year 2000; the world will continue," Mitchell says. "So we'd like to use this to build business relationships, not destroy them."

Melymaka is Computerworld's senior editor, management. You can contact her at kathleen_melymaka@computerworld.com.

Tips for a Good One-on-One

One-on-ones are supply-chain meetings. Supply-chain people should schedule and run them.

1. **Keep the number of meetings manageable.**

2. **Schedule meetings with similar suppliers or batches.** Comparing their responses will help you spot problems.

3. **Don't come in cold.** Send an agenda and request materials before the meeting.

4. **Check the supplier's roster and make sure the right people will be attending.**

5. **Hold meetings at the supplier's facility and take a plant walk-through if possible.**

6. **Don't play the inquisitor.** Be willing to share information about your own year 2000 preparations.

7. **Keep lawyers out of the meetings.**

8. **If suppliers seem vague or evasive, let your supply-chain person handle them.**

9. **Remember, both sides are there because you need each other. Don't get adversarial.**

Something to Talk About

Here are some "must-discuss" agenda items for a one-on-one year 2000 meeting with a supplier:

1. **The year 2000 plan, structure, time line, major milestones, organizational chart, executive buy-in, dedicated people and leadership.** "If senior management is not involved, that's a very big red flag," says Gary McGee.

2. **Specific areas addressed in the plan.** "For example," says Nancy J. Mitchell, senior business analyst on the year 2000 team at Pillsbury, "we're interested in what they're doing with their suppliers because we're all so interdependent."

3. **Results, including percentage of their year 2000 project that's complete.** "Up until now, it's been very hard to ascertain that," says Cathy S. Yesenosky, year 2000 communications director at Credit Suisse First Boston.

4. **Factory or plant walk-through.** This can be eye-opening if you know what to look for. "We've been looking at [a database of information on plant equipment] for a year and a half," says Gary Ferencsak at Raytheon Engineers and Constructors, "so I can spot classes of automation that are susceptible" to year 2000 problems.

5. **Logistics.** "Will the elements work in their building? Will the phones 'chuck' in their office?" asks Ken Patterson, year 2000 project officer at Army & Air Force

Exchange Services. "Have they even looked at that? That's a dragon in the kitchen that's just waiting to get you."

6. **Pertinent details.** "Where we're transmitting or sharing data files as in [electronic data interchange], we go over each one individually," Patterson says.

7. **Contingency plans.** Have them "show how they're going to ship to us if things go wrong," says Jeff Cripps, a year 2000 project leader at DaimlerChrysler.

One Project, One Voice

An effective communications plan can ease the pain that a big IT project brings

BY RICK SAIJA

It's time for the big project. You have your budget, your assignments, your schedule, your sponsors. But you're still not set — in fact, you're setting the stage for anger and frustration if you don't have a comprehensive, effective plan for communications among everyone the project will affect.

"Communication really goes to the heart of a lot of IT projects" because it can help ease the pain of change for end users, says Rob Hennelly, senior manager of financial processes and systems at Sears, Roebuck and Co. in Hoffman Estates, Ill. Hennelly created a communications plan for a recently completed data warehousing project.

In an IT project, Hennelly says, certain steps need to follow the others, "and a communications plan is no different." The steps "need to be part of an overall plan, and they need to build on each other," he says.

How do you build a communications plan? It must contain three basic steps:

■ Identify your audience and its communications needs. Talk with users who will be affected. Ask them what they need to know and how frequently they need to know it.

Consider the needs of the divisions you may be working with, suggests Fred L. Craig, year 2000 manager at the Automotive Industry Action Group. Craig, who has developed communications plans for information technology projects at General Motors Corp., says that, for example, senior management may want reports in short synopses, end users may want general messages, and a technical audience may want something else.

The most important things users

want to know, says Wyette Spotts, manager of systems and programming at Universal Underwriters Group in Kansas City, Mo., center on the question, *When?* If, for instance, their new desktop operating system will be installed or they have to take a training class or something else that will affect their workday, they will want to know dates, times and the length of time involved beforehand — in writing.

■ What are the most effective methods for communicating with the audience? How does it want to receive news? There appears to be no substitute for face-to-face communication, followed by phone calls, Hennelly says.

He recalls a three- to four-month-long project affecting a 400-person accounting group at a Sears office in Dallas. Four people sent there from company headquarters in suburban Chicago helped ease the pain of change "by just being there" and talking with the people in the office during the project. "We built that bridge between them and the [project] team," he says.

A good idea, Craig

says, is meeting with groups of users. They will tell you what you've done wrong, and "they're usually not bashful," he says.

Spotts says that though he believes talk is fine, a project's official mode of communication should be in "black and white," either on paper or via E-mail. Follow up verbal communication with a written version, he advises. That gives you the opportunity to bring across a point you may have missed in a conversation, he says.

But if you're going to use E-mail, keep it short, to the point and nontechnical, emphasizing key points with graphical



Wyette Spotts of Universal Underwriters: Talking is fine, but an IT project's official mode of communication should be written, either on paper or in E-mail

bullets, says Jo Hoppe, CIO at book publisher Addison Wesley Longman in Reading, Mass. "You can lose someone's attention with a lengthy E-mail."

Yet technology can help, Hennelly and Craig say. Craig says he sees benefits in a knowledge database that people can access for updates as well as for answers to common questions. He also has found "very helpful" a database in which people can ask questions or offer suggestions. A team member can pull those items off the database, and the questions can be answered "officially" as a team to avoid the possibility of team members offering conflicting answers.

■ Who should deliver the message? To answer that, you may have to assess how well — or how poorly — your IT people communicate with end users. A project can have two leaders: one from IT, and the other from the user side. Users tend to listen more to one of their own, Spotts says. But having a strong leader from the user side can enable his IT counterpart to focus on the technical end, he notes.

Don't say to a user, "This is what you have to do," Spotts advises, because you risk giving him the feeling that he's just part of a corporate "machine." Rather, Spotts says, because the user is the one

who's working with the system every day, allow him some freedom in deciding what he has to do.

If you need advice on crafting a plan, call on your corporate communications people, Craig suggests. That advice especially holds if people outside the company — such as suppliers, customers, unions and stockholders — must be kept in the know.

Spreading the Word

When your project is reaching a critical phase, give the most emphatic message right before the impact, Hennelly says. (An example: letting end users know when the project team will begin replacing their PCs.) "Timing is absolutely critical," he says.

The communications structure must be properly in place, Hennelly adds, or "you'll find yourself having to overcome a lot of bad will."

But even the best-laid plans may not be enough, Craig believes.

"No matter how good your plan is," he says, "you will always find someone who says, 'I didn't know anything about this.'"

Saija is Computerworld's senior editor, Managing. Contact him at rick_saija@computerworld.com.

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GOLDEN OLDIES?

With so many unfilled jobs, why do many senior IT pros claim they can't get hired? Some workers cite discrimination. Many managers say it's attitude. Others say the issues aren't so black and white By Rochelle Garner

BOR PICKERING has done it all — from software engineer to project manager to head of business development. In fact, in his more than 20 years in information technology, Pickering has developed the sort of experience employers throughout the country claim they're desperate to find.

So why can't Pickering find a job? "Once companies find out your age, you're disregarded," says Pickering, 63, who was downsized out of Digital Equipment Corp. nearly eight years ago. "Anyone over age 45 can forget about finding a new job, as far as IT is concerned."

And after four years of trying to find a full-time, permanent job in IT, Pickering did forget about it — at least for himself. Instead, for the past three years, he's worked part time at the Senior Staff Job Information DataBank, a job information exchange in Campbell, Calif., that connects older IT workers from around the country with new employers.

But while Senior Staff has managed to help many older professionals find fulfilling IT jobs, it's still far from a runaway success. "Gosh, we have a database of over 10,000 people with demonstrated skills in this industry, and it's going to waste because no one will use it," Pickering says. "That's really a shame."

It's also a bit of a mystery, given an industry supposedly in dire need of qualified workers. How does one explain U.S. Census Bureau statistics that show a 17% unemployment rate among IT workers over age 50 vs. 2% within all other U.S. industries? Such statistics have critics charging the IT industry as among the most age discriminatory in the U.S.

"There is rampant age discrimination in IT, even if employers don't recognize it," says Norman Matloff, a professor of computer science at the University of California at Davis and author of the controversial report "Debunking the Myth of a Desperate Software Labor Shortage," published last April.

Matloff's point: Age discrimination, while real, is deeply subconscious in an industry comprised overwhelmingly of people in their 20s and 30s. Company policies to the contrary, he asserts, it's hard for younger managers to look at a candidate with gray hair who fits their mental image of today's computer professional. Instead, they may perceive a worker who's inflexible, difficult to manage and expects a high salary.

The trouble is, whether or not IT discriminates against older workers seems to be in the eye of the beholder. Ask

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Continued from page 65

professionals over 50 if they feel the sting of discrimination, and most say, "Absolutely." And while no manager interviewed for this story agreed to be quoted as saying so, many described the very notion of being biased as insulting. Of course, it's human nature to deny prejudicial feelings. But even neutral observers — those whose task it is to help companies fill jobs — say that age discrimination doesn't exist in IT.

"I have been recruiting since 1988, and I've never had trouble placing older workers because of age," says Lina Fafard, search director and branch manager at Montgomery West in Torrance, Calif. "The hangup is more with the older worker feeling insecure about the younger manager's views. Most older people, when interviewing, [say] they think their age might be a problem. From my experience, age is never a factor. It's skill and attitude."

"I would say that if individuals have the right skills, then age does not seem to be the problem," agrees Diane Wardrup, president of Wardrup Associates in Richardson, Texas. "Age doesn't have any bearing as long as they bring with them the right set of skills, have kept up with technology and haven't been with one company for 30 years and that's all they know. But that's been true forever."

Perhaps. But as baby boomers turn gray by the hundreds of thousands, many report that finding rewarding work has become increasingly difficult.

"When I was interviewing for a new job, one manager actually [said] out loud that I'd be difficult to manage because of my age and experience," says a 59-year-old IT professional, who asked not to be identified. "You can bet there's age discrimination in IT."

Proving age discrimination, though, is far from easy. Consider: Last year, the U.S. Equal Employment Opportunity Commission (EEOC) received nearly 15,200 complaints of age discrimination — a slight decrease from the number of complaints received in 1996 and 1997. But in each of the past three years, nearly 64% of those complaints were deemed to be without "reasonable cause." The percent viewed "reasonable" as a pithy 3.9% last year, 4% in 1997 and 2.6% in 1996. Perhaps more telling: Total money awarded to complainants dropped to \$34.7 million last year, down from \$44.3 million the year before.

Compounding older workers' difficulty in proving age bias: The California Court of Appeals recently ruled that companies can fire older, more-expensive workers as long as that decision is based on economic issues rather than age. That last point raises an interesting question reminiscent of the chicken-and-egg puzzle: "Companies don't want to pay for an experienced person, but they will bring in someone with lesser

qualifications who commands less money," says Mary Truhler, 52, who now is a contract worker at Alternative Resources Corp. (ARC) in Lincolnshire, Ill., after his previous job at a St. Paul, Minn., company was eliminated.

"When I was a manager, I interviewed a lot of older people willing to come on board for less money just to get their foot in the door. But my company felt they would not be happy working for lower wages," Truhler says.

In fact, Truhler himself had to take a \$5,000 pay cut when he went to work at ARC — a sum he has since made up.

Fred Gustafson, 58, considers himself fortunate. As former manager of data

management of companies. His most recent stint, at America West Airlines Inc., has him on the night shift at the mainframe center's help desk.

"I know that people in my age group would consider working on the help desk a less-desirable job because we all know we can do better," Gustafson says. "Before I ran into ARC, I constantly heard that I was overqualified or that managers were afraid that I couldn't take orders from a younger person."

Gustafson not only showed he can take orders, but he also has demonstrated he can lead. America West recently offered him a full-time supervisory position, which he's about to assume. But

age tends to be appreciated," says an IT worker who asked to remain anonymous. He speaks from experience, having recently been hired as a sales consultant for big-ticket enterprise systems, where his age, he says, adds an air of authority to his customer interaction.

"It's also true, though, that older software professionals tend to be relegated to older machines, older languages and to call centers and help desks," he says.

Note the term "relegated" — which is defined as exiled to a place of insignificance. "Putting an older person on the help desk relegates that person to a less-responsible position," Truhler says. "If that person had worked in IT management or as a field-service technician, then it's taking a step down."

Recruiters disagree. "There are specific IT positions that make a lot of sense for mature IT professionals — like the help desk, because their customer service skills are good and [because they know] older languages," says Kelly Egan, ARC's vice president in charge of workforce solutions. "I wouldn't say we are relegating them to those positions."

Adds Fafard: "Telephone technical support needs the best level of talent, but no one wants to work there. So if you go to an older worker who has good problem-solving and customer-interaction skills and pay them really well, it's a big plus for everyone."

Still, the question remains: Why are experienced professionals increasingly being assigned to areas that don't take full advantage of their expertise? Because they don't have the latest skills, many say.

"Today's obsession with the skill-of-the-month is the most pernicious type of age discrimination in IT," Matloff says. "Only HR people and corporate counsels claim that it takes a long time to learn new programming skills. I say it takes a couple of weeks for someone familiar with one language to learn another. People today work in teams, with each person working on one piece of a puzzle."

So why aren't more companies willing to train people in the newer skills? "Companies have a project that's behind, and they need someone who can work on it today," Fafard says. "Yeah, someone with 15 years in the industry can add a lot of value. But who is responsible for teaching them? They are, themselves."

It may sound harsh, but that's reality. As the actress Bette Davis once said, "Getting old ain't for sissies." No one can stop from getting older. But older workers can take steps to ensure their futures by staying on top of the newest skills. ■

Garnier is a freelance writer in San Carlos, Calif.

Once companies find out your age, you're disregarded. Anyone over age 45 can forget about finding a new job, as far as IT is concerned.

— BOB PICKERING, 63, PART-TIME IT PROFESSIONAL

Most older people, when interviewing, [say] they think their age might be a problem. From my experience, age is never a factor. It's skill and attitude.

— LINA FAFARD, PROFESSIONAL IT SEARCH DIRECTOR

processing for Safeway Inc.'s Arizona region, Gustafson once had 35 people reporting to him. When Safeway decided to consolidate all its data processing divisions in 1993, Gustafson stayed on to help oversee the effort.

"I stayed about a year, but nothing was getting accomplished," Gustafson says. "Plus, I was getting calls from stores all over the area at all hours of the day. I was burned out."

Gustafson, seeking a less-b hectic schedule, decided to quit. Four months later, he landed contract work at ARC. In his five years at ARC, Gustafson has worked in a variety of jobs at an assort-

Gustafson knows plenty of people who aren't as lucky.

"I have lots of friends who dropped out of the field entirely, either because they couldn't find work or they considered the work they could find beneath them," Gustafson says. "Because I'm with a contract firm, I haven't had those problems."

Gustafson makes an important point: When it comes to finding new jobs, older professionals tend to have more success at certain kinds of companies.

"Today, computer-equipment sales and consultancies are more likely to hire older workers since that's where

Dear Career Adviser:

I'm an IT business consultant with more than 30 years of experience in application development using Delphi, object-oriented native Windows programming, Visual Basic, Microsoft Access, Windows NT-based client/server solutions, Novell, Microsoft SQL Server and Oracle

client/server solutions.

I'm an excellent project manager, extremely effective in defining requirements and in making recommendations and then developing and implementing solutions. I am concerned, however, about marketing myself, especially when I am competing with younger consultants who may have more experience in newer technologies.

What should I be saying about myself on paper? — EXPERIENCED ON PAPER

Dear Experienced:

If the first statement you are giving potential clients is that you have "30 years of experience," you may in fact be shooting yourself in the foot because companies want to hire consultants who will bring them up-to-date technical and management expertise they don't already have in-house.

When you are competing in Internet time, which is a whole lot faster and indeed based on newer technologies, you need to remember that

it's not your "30 years of experience" that a potential client wants to buy, but a combination of your project-management experience and your ability to help them effect an up-to-date implementation.

Since in fact you seem to handle projects extracting data from legacy systems that ultimately result in Web-enabled applications using Common Gateway Interface and Java, be sure you aren't burying this information in your résumé but are making it clear from the start.

Second, especially since you are working independently, you need to be sure that your technical skills are in fact up to date. Even if you feel you don't have the time for courses and staying current, you must.

The best way is to be sure you're always working to get some experience with a popular, well-entrenched business package and application under your belt, whether PeopleSoft, SAP or Oracle-based — in other words,

something really desirable in the marketplace. The cold, hard facts are: Yes, to be a desirable commodity, you've got to have the technical and the management skills.

Dear Career Adviser:

I'm exiting the Navy in August after 13 years of technical and management experience. I have an IS degree and am working on a graduate degree in electronic commerce to be completed in June. Any ideas on how to best market my skills? — SOON TO BE IS-NAVY

Dear Soon:

Dave Marzola, a senior department head in the Navy who's now in a software testing role at a telecom company, offers this advice:

"It's your technical experience, not your management experience, that is your key to

getting into the corporate world." When you interview, show you can work in team organizations where you will be asked to do more with fewer people and resources.

Emphasize your information technology background and the particular systems you've worked on, whether they're year 2000 or networking. Get a current degree, do internships with business companies to get referenceable projects on your resume, and take a job as a contractor if need be, just to get business experience under your belt.

As for marketing yourself, Marzola found names of people in jobs and at companies he wanted to go to on the Internet and started writing them.

Ultimately, while in a chat room, be connected with the human resources person at the telecom company he's now with.



DAVE MARZOLA: IS an expert in high-tech careers and recruitment. Send questions to him at www.computerworld.com/career_adviser

Dear Career Adviser:

I am a programmer with about six years of experience living in California and working for a high-tech, Internet-type company.

I am going to be married, and we're discussing whether or not moving to the Chicago area would be good for my career given my interest in the Internet and electronic com-

mmerce. How do I find out what's going on in the Chicago area? — CHICAGO, HERE I COME

Dear Chicago:

The companies you'll want to be in touch with will probably be attending an AdWeek Chicago one-day training event, cosponsored by DoubleClick, on how to buy and sell Web ads on March 8, 1999 (contact mplock@adweek.com).

But you can check this hot market out in other ways, too. Visit Interactive Chicago (www4.interactive.com/ics/interchg.html), Chisnot (www.chisnot.com) and Jobs in Chicago (www.digitalchicago.com/), particularly the columns by Elizabeth Taggart, owner of Spark Communications. Contact the Association for Internet Professionals (www.aipassociation.org), which has chapters in a wide variety of cities. You might research big companies, like Sears, World Book and Kellogg's, since many of the traditional consumer products companies are all developing an electronic-commerce type/Web presence.

But trying to find the smaller start-ups like Neophysics or Intelipost, an electronic-commerce company, might take more digging. Per John Lorimer, Intelipost's vice president of production, don't forget to contact Columbia College and the career centers at Northwestern University and the Illinois Institute of Technology for other leads as well. ■

WORKSTYLES

Productivity

The high-tech hubs of San Francisco and San Jose, Calif., are two of the top three most productive cities in the U.S., according to a new study by Syntex Corp. No. 1 is Dallas, another technology center.

The study, conducted by Texas research firm Decision Analyst Inc., scored 319 metropolitan areas in the U.S. according to eight criteria.

These included economic vitality, output per worker, level of education and training, and diversity of the business sector.

The study found that each of the

top 10 cities (see chart) has a diverse economic base and highly skilled labor force.

It also concluded that winners either had a strong manufacturing

economy or that they were regional centers for retail trade, transportation and/or professional services.

It also found that business expansion, especially on the small business end, is a necessary component of productivity.

The full chart is available from www.syntex.com/Snapshots/jrnsr/index.html.

Dallas	336	Provo-Orem, Utah	227
San Francisco	331	Boise, Idaho	226
San Jose	328	South Falls, S.D.	224
Houston	326	Nashville	224
Phoenix	327	Salt Lake City-Ogden, Utah	223

SOURCE: DECISION ANALYST INC., ARLINGTON, TEXAS

Management

In a U.K. study of managers, 56% said they considered hands-on technology skills to be the most important skill to learn. Strategic knowledge and information management came in second, at 38%, in the study of 1,382 managers, done by the UK Institute of Management and the University of Manchester Institute of Science and Technology.

Just 30% of respondents treat employees as the most important asset, though most acknowledged that investing in employees is key to improving the quality of work life. And 78% said they worked more than 40 hours per week; 34% said they work more than 50 hours.

SNAPSHOT High-Cost Hubs

Costliest destinations per mile:

Richmond, Va.	\$7.4 cents
Charlotte, N.C.	\$3.2 cents
Birmingham, Ala.	\$3.3 cents
Least expensive destinations per mile:	
San Jose	\$1.1 cents
Atlanta, Ga.	\$1.7 cents
Portland, Me.	\$1.9 cents

Source: Survey conducted by the number of miles flown between destinations. Data for 1998

U.N.



Words

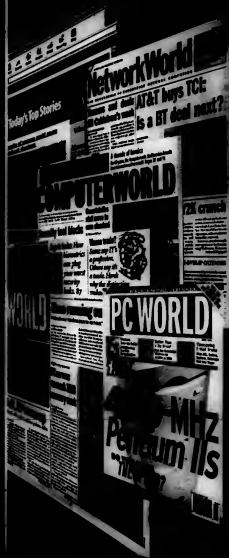
have the power to unite, to define, to set a course. And when words appear between the covers of IDG publications, they have an even greater power: they influence the most critical economic force in the world today – the, technology buyers driving the Information Age.

There are many people involved in selecting technology to drive business results. And IDG is the only publisher with the breadth of trusted resources to reach the full spectrum of IT buyers. Each IDG publication maps to a specific, influential audience responsible for driving the adoption of technology. IDG allows marketers to place their message within award-winning editorial environments where they can effectively influence all levels of the decision making process.

With IDG publications like CIO, Computerworld, InfoWorld, NetworkWorld and PC World (plus 290 others in 75 countries), you have the highly targeted, relevant editorial that buyers turn to first. And through IDG's 225 Web sites, buyers get the timely and straightforward perspective they need when deciding on new technologies. The fact is no one addresses the concerns of this extensive community like IDG. Innovation excites. Yet it can also be a barrier to those who don't completely understand it. That's why IDG is there to decipher, go below the surface and convert information into the wisdom necessary to help our readers make smart, comfortable buying decisions.

IDG also provides opinion, insight and inspiration through their leading research company (IDC), best-selling book titles and numerous worldwide industry events. All of which make IDG the most trusted source for technology information anywhere in the world.

Answers for the Information Age



What is the moon?
A question.
What answers
do you seek?
The Internet.
The Internet.

Actually, it works very well. Maybe because so much of it runs on Compaq. Four out of the five most popular Web sites are powered by Compaq. Hundreds of millions of hits are handled by Compaq platforms

every day. Three-quarters of the top ISPs have standardized on Compaq for their Windows NT based Web hosting. And if you've ever received e-mail, chances are, we helped get it to you. To find out how the Internet can help grow your business, feel free to ask the source at 1-800-AT-COMPAQ. Or visit www.compaq.com/moon.

COMPAQ Better answers:

TECHNOLOGY

INTEL REACTION

Corporate users like Intel's plan to add security features to processors — but not enough to trade in their PCs early. **75**

BETTING ON LINUX

Price was the priority when a Seattle retailer decided to install Linux servers in its stores — and the prospect of better-than-NT performance is a nice kicker. But Jay Jacobs Inc. is hedging its bets by sticking to Unix and NT at headquarters. **72**

REVIEW: SQL SERVER 7.0

The upgrade packs solid new features and improved usability — but we encounter a few installation hiccups. **79**

SERVER DISASTERS

Used to be, it took a mainframe crash to take down a business. But as more vital corporate systems run on Unix and NT, IT is applying mainframe-style disaster recovery to client/server systems. **75**

BUFFER ZONE

Ken Krueger, of MCI WorldCom, built a software buffer between his core applications and his message-oriented middleware. In an interview, he says it's saved the company \$20M in five years. **88**

FOLLOW-UP

Gerber Products bet successfully on new data translation software to help it manage grocers' inventory. But business — not technical — issues have kept the company from taking full advantage of its inventory-planning capabilities. **72**

BRIO BETA

Users get a peek at Brio Technology's Enterprise 6.0 business intelligence suite. **74**

FRANKLY SPEAKING

Threat? What threat? Columnist Frank Hayes writes that year 2000 is suddenly everybody's best friend — or a convenient way to cover all manner of budget and business sins. **82**

JUMPIN' JUPITER

'Jupiter' devices — bigger than PDAs, smaller than notebooks — do what they're supposed to: E-mail, browse the Web, create memos. **79**

THE BIRTH OF FORTRAN

Flashback: An all-star team spent 1954 developing the first automatic programming language. **87**

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BARGAIN PCS: NO BARGAIN?

The plummeting price of consumer PCs is tempting plenty of IT managers. But the downsides are shorter product life cycles, nonstandard components and difficult upgrades. For large companies running critical applications, the life-cycle standardization, brand-name components and solid support make the major vendors' business systems worth paying for.

84

RETAILER BETS BIG ON LINUX

But plays it safe with more established NT, Unix at its corporate headquarters

BY DAVID GREENSTEIN

LINUX HAS THREE advantages that appeal to a wide range of corporate priorities: users say low cost, reliability and fast performance.

That wide range of benefits is earning Linux a chance in the corporate information technology world.

Price was the priority for Seattle-based retailer Jay Jacobs Inc., which plans to install Linux servers in all 120 of its stores this year. But Chief Financial Officer Bill Lawrence is also pleased by the prospect of getting fast, Unix-like performance for less than the cost of the slower Windows NT environment.

The Linux servers' tasks will include hosting in-store Informix Corp. databases that will track purchases by customer as well as by item.

Because Linux isn't burdened with a graphical interface, its performance is often faster than that of Windows NT on low-end hardware, said William Peterson, an analyst at International Data Corp. in Framingham, Mass. Linux, an open-source version of Unix that runs on PC hardware, has a graphical interface but doesn't require it.

Jay Jacobs is spending \$1.7 million this year — about 2.5% of its revenue — to replace the ancient DOS-based systems at its headquarters and in its 120 stores. The in-store parts of the project would have cost \$980,000, but by using Linux instead of another operating system, the company is saving about \$80,000, or \$666 per store, Lawrence said.

But Lawrence is taking the savings gained by adopting a new operating system only so far. At headquarters, he's hedging his bets with the more established NT and Unix. Although Linux's costs are the prime motivator for companies like Jay Jacobs, Peterson

said, many other companies use Linux for its performance and reliability. Linux's low cost was just one factor that appealed to IT manager Frank Clay at Gannett Co.'s Offset Telematch unit in Springfield, Va. The unit processes demographic and contact data for marketers and fund-raisers.

Linux cost the company \$300 per server vs. \$1,500 for a Data General Corp. Unix system, and it runs on cheaper PCs, Clay said. The unit will use Linux as the operating system for its data servers to run Informix database software.

But the decision to switch to Linux, as well as the unit's widespread use of Linux elsewhere, is also driven by its reliability, Clay said. "The only time I've ever seen a Linux box crash is with a hardware failure," he said.

Peterson said many users are now considering Linux because they have become frustrated with Windows NT's need for service packs to perform with adequate stability.

For example, Envision Utility Software Corp., a maker of billing software for utilities, has found a large performance increase when using Oracle Corp.'s Oracle database on Linux as opposed to on NT, said systems administrator Sam Cappello.



JAY JACOBS INC.'S BILL LAWRENCE: The Seattle retailer expects to save money and boost performance by going with Linux

"What takes 10 seconds on Linux takes a minute or two on NT," he said.

But as at Jay Jacobs, Linux

just has a foot in the door at Envision, which now uses it only as a test bed for applications under development. ▀

FOLLOW-UP

Gerber Stalls Strategic EDI-Driven Inventory

New messaging software a boon, but Y2K, merger priorities for now

First in an occasional series in which Computerworld follows up on case studies from the past.

BY CRAIG STEDMAN

New software that Gerber Products Co. installed last spring to simplify the job of managing baby-food inventories for grocers is working as advertised. But plans to use it to drive more inventory-management deals are on the back burner for now.

The software, developed by Swedish application-integration vendor Frontec AMT and first adopted by Gerber, is successfully translating electronic data interchange (EDI) messages from different grocers into a common format that can be fed into the Fremont, Mich., company's supply-chain management system.

That makes it easier for Gerber to accept EDI feeds of sales data from grocery-store chains.

Other Priorities

But internal business issues have caused Gerber to hold off on plans to use the software

more strategically to greatly increase the amount of inventory it manages for stores.

Higher-priority items, such as year 2000 fixes and an upcoming merger with other U.S. units of parent company Novartis Group, "are kind of taking people's minds away from" inventory management, Kline

program since turning on the Intelligent Messenger software seven months ago [CW, June 8, 1998]. Before, the company's information technology staff had to write custom code whenever it tied a new participant to the EDI system. But with Frontec's software, those hookups can be done "in hours

management software to schedule new deliveries of baby food to stores.

Kline said that the messaging piece is such an improvement over the previous system that "the planners were pretty much lost" when it had to be shut down recently for a day while Gerber worked on its Notes system.

But Gerber still manages inventories on only about 30% of the \$700 million worth of baby food it sells in the U.S. each year.

The company has talked about eventually increasing that to about 80% to help build grocer loyalty. For the time being, though, it's "kind of picky and choosing which customers we go with" while tending to the more pressing business issues, Kline said. Before adding more customers, Gerber also would have to increase its inventory planning staff.

Scott Lundstrom, an analyst at AMR Research Inc. in Boston, said managing inventories for cost-obsessed retailers "is becoming a competitive reality" for manufacturers.

"You have to offer it or risk being displaced," Lundstrom said. But he noted that Gerber has "a luxury that a lot of companies don't have" — a well-established brand that doesn't go through many down cycles. ▀

Gerber tightens inventory control

During infancy

Gerber's inventory control system is a complex one. It involves a lot of data and a lot of people. The system is designed to help Gerber manage its inventory of baby food products. It does this by tracking the flow of goods from the manufacturer to the retailer. The system is also designed to help Gerber manage its inventory of baby food products. It does this by tracking the flow of goods from the manufacturer to the retailer.

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Winner of the Database Race.

Ever wonder if there might be a new, powerful and easy-to-use database management system that can solve your performance and scalability problems?

It's called Caché – the “post-relational” DBMS that offers advanced object technology, Web connectivity and faster SQL performance. Caché can do so many good things that it has won a prestigious international award as “the most exciting new database product”.

Caché is already in use today in hundreds of enterprises, ranging from small entrepreneurial companies to the world's largest client/server network.

Caché is the latest database technology from InterSystems, the worldwide leader in high performance database products for transaction processing, with over 2,000,000 users... and 20 years of database experience.

The “best new database” is from a well-established company.

“Best New Database”

-1996 Information Management Award Sponsored by Deloitte & Touche Consulting Group



BRIEFS

Backup Tool
Supports SAP, Oracle

Seagate Technology Inc. is offering a Backup Exec agent that supports SAP All's R/3 for Oracle Corp. databases running on Windows NT. According to the Scotts Valley, Calif., company, the software integrates with the SAP backup interface and provides backup and restoration of both individual table spaces and the complete Oracle database. The software costs \$2,995.

www.seagate.com

Managing Domino

IBM Software Inc. recently unveiled its newest suite for Lotus Development Corp.'s Lotus Domino on Windows NT. The Houston company said the software integrates event detection, diagnosis and correction capabilities with the ability to report "what-if" modeling and analysis. The suite costs \$1,200.

www.ibm.com

Siebel Suite
Coursing the Web

Siebel Systems Inc.'s recently released Siebel 90 is a suite of Web-based front-office applications for enterprise relationship management. According to the San Mateo, Calif., company, the suite includes call center, field service, product configuration and sales enterprise modules, among others.

Pricing for the modules varies. A new version of Siebel Sales Enterprise and Service Enterprise costs \$1,350 per named user.

www.siebel.com

Constellar Hub Update

Constellar Corp. in Redwood Shores, Calif., said next plans to release an upgrade of its application integration software with a built-in interface to Oracle Corp.'s business applications. Version 3.0 of Constellar Hub also will include a link to IBM's iSeries message queuing service.

Pricing will be about \$250,000. Constellar said.

www.constellar.com

ACCELERATION APPS
CUT MESSAGING COSTS

Technology speeds remote workers' access to E-mail, network

BY ROBERTA FUSARO

COMPANIES ARE counting on acceleration technology to help remote workers get their E-mail and other files from the network faster, saving both time and money.

For example, because they are charged for their connection time, about 5,000 field workers and caseworkers at the Department of Social Health Services (DSHS) for

the state of Washington need quick downloads when they dial in to the agency to collect E-mail and information stored in shared folders, mainframe databases and personal workstations.

Acceleration technology makes it cheaper for them — and the agency, said Ron Leatham, a computer technical specialist at the DSHS.

The agency typically has cut its connection times in half, Leatham said, in the eight

months it has used LapLink Enterprise Exchange Accelerator from Bothell, Wash.-based Travelling Software Inc.

LapLink Enterprise Exchange Accelerator has a built-in proprietary delivery protocol and E-mail compression code. It sits on the Exchange server and replicates clients right on the LAN.

The LapLink accelerator downloads all messages to the client but lets users filter on the fly E-mail and attachments that seem to be taking a long time to download.

Marcus Johnson also has seen acceleration software cut messaging time in half. A mobile computing manager at an energy company in the South with about 800 remote users, Johnson said his company has cut replication times from eight to 12 hours to four hours using the TurboGold

Client-to-Server accelerator from Dayton, Ohio-based Stampede Technologies Inc.

"We have a lot of people hitting [Notes] databases and replicating at same time," he said, and TurboGold speeds that replication from the Notes client to a server.

No Training Expenses

And because the message boost happens behind the Notes interface, the company doesn't need to spend extra money on training, Johnson said.

Not all accelerators work for all E-mail systems. The LapLink accelerator, for example, works only with Microsoft Corp.'s Exchange and Outlook, and TurboGold works only with Lotus Development Corp.'s Notes. That software speeds replication of databases that sit on a Domino server.

According to International Data Corp. (IDC) in Framingham, Mass., more than 40% of employees in large companies will access LANs remotely this year. That usage level has led to the growth of these types of products, said Stephen Drake, an IDC analyst. ■

VENDOR	LOCATION	PRODUCT
Stampede Technologies	Dayton, Ohio	Accelerator for Lotus Notes
Travelling Software	Bothell, Wash.	LapLink Enterprise Exchange Accelerator

Intelligence Suite Takes a Broad Approach

Brio Enterprise 6.0 to boast OLAP tools, offer support for myriad data sources

BY STEWART DECK

Brio Technology Inc. recently gave users a peek under the hood at Brio Enterprise 6.0, the forthcoming version of its business intelligence product suite.

The new suite, now entering its beta-testing phase, includes new analytic reporting capabilities, online analytical processing (OLAP) query and analysis tools and a visual application designer for building analytical applications.

The goal is to let users build interactive reports that can run on intranets and to package reports and analyses.

Brio Enterprise 6.0 supports multidimensional databases and Microsoft Corp.'s OLE DB for OLAP. It includes interfaces for applications from

SAP AG, Hyperion Solutions Corp. and Informix Corp.

The suite will be generally available in the second quarter, according to Brio. Pricing hasn't been announced.

Richard Creeth, an analyst at Creeth, Richman & Associates Inc., a Norwalk, Conn., consultancy, said this suite doesn't take a technological step in any single area but instead takes a much broader approach than competing products.

Two Rivals

Creeth cited Business Objects S.A. and Cognos Inc. as Brio rivals.

"They're including a quality report writer, an analytic application console and...[support for] many different data sources," Creeth said. "I'm not

aware of a product on the market today that [has all that] Brio is trying to provide here."

Mark Torres, data warehousing project leader at Atlanta-based BellSouth Corp., said his group has been testing Brio Enterprise 6.0 for data querying and analysis of its 1.7T-byte data warehouse.

"We needed an enterprise business intelligence suite that delivered across the full spectrum" but wouldn't intimidate occasional users, Torres said.

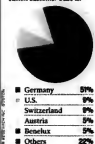
Users are starting to look for product suites that integrate reporting, querying, OLAP analysis and development tools, said Wayne Eckerson, vice president of technology services at the Data Warehousing Institute, a for-profit educational group in Gaithersburg, Md.

"Vendors who hit this business intelligence sweet spot will be market leaders," Eckerson said. ■

SNAPSHOT

Home-Field Advantage

Where Germany-based SAP AG's human resources application customer base is:



Total number from 2,800 includes data that are in the process of installing the software or are planning the implementation.

Jini: Promising Technology, But Will It Catch On?

Analysts say it's still too early to tell

BY CAROL SLIMA

Observers agree that Sun Microsystems Inc.'s Jini technology carries considerable promise to instantly interconnect electronic devices via the network and let them share resources and useful services.

But products aren't expected to start shipping for a year. And the list of Jini supporters has some notable no-shows, including Microsoft Corp., Compaq Computer Corp. and Oracle Corp. And even proclaimed licensees aren't exactly forthcoming with specifics on products and ship dates.

That's why, analysts say, it's too early to tell how successful Jini will be.

The basic concept of Jini calls for a Jini-enabled device

to announce itself to the network. A Lookup Service would keep track of which devices are on the network and which services can be accessed. Then proxy code would move from device to device, telling one how to use another.

A print job, for instance, could be diverted to a different machine — even one in another location — rather than the one that it's programmed to use. Computations that might be tough for limited-function palmtop devices to perform could be directed to servers with more computing power.

There's even talk of using Jini, with other technology, to help computing systems share processing loads.

Early Jini supporters include

Jini Licensing Plans

COMPANY	LICENSING PLAN	NOTES
HP	Yes*	Also plans to incorporate Jini into its JetSend device-to-device communications protocol
IBM	No	But it did sign letter of intent to be part of Jini development community
Microsoft	No	Announced its own competing Universal Plug and Play technology
Norvell	Yes	Exploring prospects of Jini-enabled devices that support Novell Directory Services
Oracle	No	Evaluating Jini technology; no decision has been made about support

*NOT YET OFFICIALLY A DIVISION

Other licensing Jini includes: America Online, Citicorp, Computer Associates International, Microsoft, Philips, Sun, 3Com Palm Computing, Toshiba and Xerox

the following companies:

■ Consumer device makers such as Eastman Kodak Co., which will work to connect cameras to networked printers, and Royal Philips Electronics NV and Sony Corp., which want to enable remote access to home entertainment systems.

■ Printer and copier makers, such as Xerox Corp. and Canon Inc., which want customers to be able to access their devices and documents

services from anywhere.

■ Palmtop, cellular telephone, pager and wireless device makers, such as 3Com Corp.'s Palm Computing division, Motorola Inc. and Nokia, which want to enable their devices to interact.

As Jini's technology and politics sort out, analysts advise corporations to wait. "For corporations, it's not something that's going to have immediate value right now," said David Smith, an analyst at Stamford,

Conn.-based Gartner Group Inc. Microsoft is the major competitor to watch in this space, Smith said. Microsoft's response to Jini is called Universal Plug and Play. But Microsoft has been even more sparse on details than have Sun and its partners.

"Microsoft's answer to Jini is lame, boring and not attracting a lot of attention," said David Card, an analyst at Jupiter Communications Inc. in New York.

CONVERGENCE NO SLAM-DUNK

Integrated voice, data services hoping to make hype a reality

BY MATT HAMBLIN

JUMPING ON the convergence bandwagon may not be as easy, or as automatically beneficial, as it sounds, users and analysts said last week.

"It sounds wonderful, but I wonder," said J. C. George, a computer operations manager at the National Institutes of Health in Bethesda, Md., after hearing a presentation about

AT&T Corp.'s new Integrated Network Connection (INC) managed service.

AT&T is the latest vendor to offer merged voice and data services through one pipe, promising large customers savings and simplicity — which information technology people have long clamored for.

Theoretically, integrated programs would be simpler to administer. Most of the major

vendors are said to be testing converged technologies, but none have announced paying customers.

Equipment Headache

Analyst Jim Metzler at The Metzler Group in Newton, Mass., said users could spend years and waste money moving to an integrated service if they must have their own staff oversee the operation and maintenance of new equipment that is provided by carriers.

AT&T and Sprint Corp., for example, have said they plan to install Asynchronous Transfer Mode switches on customers' premises.

On the other hand, Metzler said, companies might realize tremendous network operations savings by converging voice and data.

He said companies could

combine two network staffs for data and voice into one.

Metzler and other analysts urged users to consider convergence services only after drafting a detailed technology plan based on their company's long-term business needs. Such needs might include how soon and how frequently a company will need bandwidth for videoconferencing or to transfer rich graphic information.

Increase Bandwidth

One key to the value of integrated plans is dynamic bandwidth allocation, which means a customer could increase bandwidth when it was needed and reduce it when it wasn't needed to save money.

Today, most businesses pay a set cost for the pipes into their operations each month.

For example, a growing company might purchase an additional T1 connection but use only 10% of that line's capacity for years, all the while paying for full capacity.

Under integration, carriers would charge by bits used.

"We're real anxious to get the dynamic bandwidth allocation, because that's where the real savings occurs," said James Miller, vice president of technology at Hallmark Cards Inc. in Kansas City, Mo.

Miller is testing Sprint's integrated On-Demand Network and has combined some long-distance voice, Internet access and point-to-point data transmission over a single connection at Hallmark headquarters.

Miller has said he hopes to see savings of 40% or more on conventional networking costs. ■

SNAPSHOT

E-Mail Math

Average annual total cost of ownership per user:

Exchange Method	\$100.00
Microsoft Exchange	\$64.95
Netscape Messaging Server	\$91.14
Sun Internet Mail Server	\$33.38

Base: Figures collected from 100 Fortune 1,000 and government organizations

SOURCE: THE METAQUEST GROUP INC. PAID-TO-BUY CALC.

CD-R and CD-RW

DEFINITION

CD-R and CD-RW are types of compact discs that you can copy files onto. CD-R is a write-once format, meaning you can store information on a disc once. You can add data to a new location, but you can't erase or write over existing data. With CD-RW, however, you can write, rewrite, rename and erase information up to 1,000 times.

BY CARLA CATALANO

You may remember when CD-ROM really meant "read only." Today's writable compact disc technology allows end users to read and write reports, photos and presentations.

There are two types of writable CDs: CD-Recordable (CD-R) and CD-Rewritable (CD-RW).

Both allow CD-ROM-compatible discs to be created on the desktop.

These CDs are individually produced with an optical drive connected to the computer and require pregrooved CDs. Once recorded, the discs are like other CDs.

CD-R uses media that can be written to once at any location on the disc. You can add information to the disc, but you

have to put it in a different place.

"Think of CD-R as writing with a ballpoint pen. You can't erase or write over where you've already written," says Bob Katzev, vice president of Disk/Trend Inc. in Mountain View, Calif.

Archives, Music and More

Mainly used for archival and distribution purposes, CD-R is for "folks who need to distribute information or back up from their hard drive," Katzev says. And because of its write-once, nonerasable format, CD-R safeguards against deleting or overwriting files.

A popular use for CD-R is making custom music CDs. Users also use CD-R to download files, such as screen savers and search results, from the Internet to prevent hard drives from corruption.

In contrast, CD-RW allows you to rewrite to the disc up to 1,000 times. Stored data on this type of disc isn't permanent because it can be erased and written over. CD-RW is like "writing with paper and pencil," Katzev says.

CD-RW allows you to reuse the media, so instead of having a large number of discs on hand, you can use

the same disc again and again. CD-RW also is the "media of choice" — it costs less than CD-R over time because you buy fewer discs. But more CD-R is sold because each disc is less expensive, according to Katzev.

There are some drawbacks to CD-R and CD-RW technology. Both are used to record audio, video and data, but "formatting is long and cumbersome," says Wolfgang Schlichting, an analyst at International Data Corp. in Framingham, Mass. The media is blank when you buy it, and it can take up to an hour to format a disc.

A major difference between the media is compatibility. CD-R is read-compatible with CD-ROM drives, which adds to its popularity; however, CD-RW can be read only in multi-read CD-ROM drives.

For example, if you record an audio CD and want to play it back on your CD player, you would use CD-R because the audio player can't read CD-RW.

If you want to play it back on your PC and the PC CD-ROM drive is multiread, then you would use CD-RW media.

Catalano is a freelance writer in Holliston, Mass.

MORE ONLINE

For more articles and other resources dealing with CD-R and CD-RW technology, visit our Web site.

www.computerworld.com/home



Disc Differences

CD-R:

Mainly used for: Making custom music CDs. Also used to download files such as screen savers and search results from the Internet to prevent hard drives from being corrupted.

Run time: 63 or 74 minutes

Drive compatibility: All CD-ROM drives and CD players

Makings of the disc: There's a single recording layer that consists of an organic dye and almost always has a gold reflective layer. Once the dye has been burned, it can't be altered (thus, write once).

Approximate price: \$1 to \$5 per disc

CD-RW:

Mainly used for: Storing reusable information or files, such as content for reports or presentations that would need multiple revisions

Run time: 63 or 74 minutes

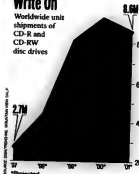
Drive compatibility: CD-ROM drives manufactured after 1997. CD-RW is much less reflective than CD-R, which makes the disc difficult to read by most CD-ROM and CD-R drives on users' desktops today.

Makings of the disc: The recording area is made up of three layers. During the writing process, the top and bottom layers pull heat from the middle layer which is made of a metallic phase-change alloy, a nonorganic material. This process changes the reflectivity of the disc and is reversible (thus, write many times).

Approximate price: \$5 to \$10 per disc

Write On

Worldwide unit shipments of CD-R and CD-RW disc drives



'Jupiter' Devices Down to Earth



WHAT'S IN JUPITER?

The slightly-larger-than-PDA **Jupiter-class** machines offer the mobile functions most of us need on the road, such as E-mail checking, Web browsing, memo creation and spreadsheeting, in an inexpensive, easy-to-use package.

BY CYNTHIA MORGAN

AT LEAST 3 pounds and under \$1,000, eye-catching H/PC Pro devices (Jupiter machines) look more like notebook computers than the adult-size personal digital assistants (PDAs) they really are. But if you expect notebook attributes such as a hard drive and Windows 9x, you'll be disappointed. They do, however, offer the mobile functions most of us typically need on the road — such as E-mail checking, Web browsing, memo creation and spreadsheets — in an inexpensive, easy-to-use package.

But H/PC Pro devices won't run standard PC applications. They rely, instead, on Microsoft's Corp.'s Windows CE "pocket apps" built in to read-only memory or stored in RAM. They will run most Windows CE apps and offer PowerPoint slide show viewers and a few useful tools. Extra data storage usually comes from CompactFlash cards, and there's a Type II PC Card slot to augment the built-in 33.6K bit/sec. modem.

Best of all, these devices can run as long as 12 hours on a single battery charge. Like the 3Com Corp. PalmPilot and Windows CE PDAs already out there, Jupiter systems can automatically stay in sync with your desktop whenever connected via serial port, so they're always up-to-date on E-mail and selected data files.

Their instant-on feature also eliminates battery-munching waits to boot up.

I checked out three of these H/PC Pro devices and liked what I found enough to hate sending them back (well, one of them, at least — Sharp's Mobilon was my favorite). Their keyboards and color LCD screens aren't full-size but then, neither are most sub-notebooks such as Gateway's Fire Ant or Sony Corp.'s Vaio 505 series, which sell for two to three times as much.

Oh, Say Can You CE?

The potential H/PC Pro audience — mostly mobile office workers — is huge, but not all-encompassing. Microsoft's pocket apps remain relatively primitive. Pocket Word is little more than a memo writer, Pocket PowerPoint merely a slide viewer. Win CE 2.2 quirks make routine desktop synchronization a pain at speeds faster than 19.2K bit/sec., and the machines lack Ethernet and parallel ports; adding either fills up the sole PC Card slot. And not all PC Card devices offer Win CE drivers. Plus, H/PC Pros need hard-to-find proprietary cables for synchronization and other chores; pity the traveler who loses one. ■

Morgan is a features editor at Computerworld. Howard Millman, who operates the Data System Service Group LLC, a consultancy in Croton, N.Y., also contributed to this review.

Clio

Vadem Ltd.
www.vadem.com
\$999

If there ever was an award for technological schizophrenia, the Clio would win it, hands down. This electronic Swiss Army Knife does triple duty as an H/PC Pro, electronic flip chart and pen computer (remember those?), manages 9.5 hours of battery time and weighs 3.2 pounds. Its 9.4-in., 640-by-480-pixel color touch screen flips face-up and has excellent hand-writing recognition. Open it up about 45 degrees, set it square-side down and you have a mini slide show viewer. In notebook mode, the adjustable screen floats above the keyboard, giving it a footprint that's as thin as table-friendly.

That's the good news. The bad? The Clio is slow, has an uncomfortably curvy keyboard and lacks the slide-editing software you'd expect on a presentation machine. And it doesn't automatically switch from landscape to portrait orientation when you put it in pen computer mode. A good idea, but the Clio needs more time at the drawing board.



Mobilon Pro PV-5000

Sharp Electronics Inc.
www.sharpelectronics.com
\$899

It can't match the Clio for flash, but the Mobilon still is a sleek little beast. It boasts the best display of all, with 640-by-480-pixel resolution at 4,096 colors instead of the others' 256 colors. It offers the more desirable touch screen — even though it's smaller at 8.2 in. — and has a keyboard only slightly more cramped than the Jornada's, packaged in a relatively light 2.7 pounds. The machine offers a much-needed graphics editor that might overcome Pocket PowerPoint's drawing limitations.

Without question, the Sharp unit offered the best combination of design, functionality and performance of any H/PC Pro system we tested. Still, it could use some tweaking. There's no CompactFlash slot, so extra data storage will have to come from PC Cards. But you'll need a separate PC Card adapter to use a VDA monitor, so any presentation you run will have to fit into the unit's 16M bytes of RAM.

HP Jornada 820

Hewlett-Packard Co.
www.hp.com/jornada
\$999

The Jornada is enough like a notebook computer to make mobile users feel right at home, which also makes it the most aggravating of the three Jupiters I tested. The 10-in., 640-by-480-pixel screen is more readable than the Clio's, and its keyboard is the best of the three for large fingers. But its tiny, notebook-like trackpad made mousing all but impossible, especially after using the others' intuitive touch screens. Its 10-hour battery life was impressive, but a dictatorial power management system partially eliminated the instant-on convenience.

On the positive side, the 2.5-pound Jornada has a full-size VDA port so you can switch to a big monitor without special cables. HP pumps the usual 33.6K bit/sec. modem for a V.90 56K bit/sec. edition and adds financial calculators and other tools you won't find on the Clio or Mobilon. If HP can lose the trackpad, it'll have more of a winner on its hands.

A Fast, Easy SQL Upgrade

SQL Server 7.0 Packs Performance Boost

BY PAUL FERRILL

Microsoft Corp.'s SQL Server 7.0 is an easy, obvious upgrade for organizations that run SQL Server 6.5. But after testing it during the past two months, we've found that it also makes a powerful Windows NT database server for any organization, offering solid new features, performance enhancements and improved usability.

We installed the new version on three different platforms: a server, a desktop and a notebook.

First we loaded it on a Pentium 200 MMX server with 128M bytes of RAM and 4.5G bytes of disk storage to evaluate the full install on a Windows NT 4.0 Server system. The entire process took less than 20 minutes and went smoothly, as did our 30-minute mobile installation on a 133-MHz Dell Pentium laptop with 40M bytes of RAM and a 2G-byte hard drive.

We had trouble, however, when we installed the product on a desktop machine with a 200-MHz Cyrix/IBM Pentium, 64M bytes of RAM and a 6G-byte disk drive running Windows 98. Our first attempt failed, with a message that the system couldn't start the server. It turned out that Version 7.0 had problems identifying the CPU as a Pentium processor. We switched to a Compaq Deskpro Pentium II 300-MHz system with 32M bytes of RAM running Windows 98, and it ran without incident.

Every area of SQL Server 7.0 has been enhanced in some fashion, with many underlying components rewritten from scratch. And Microsoft has added features that other database packagers charge extra for, such as online analytical processing, query op-

timization and a full-text search engine. A new set of profiling and tuning tools makes optimizing database performance simple.

You're also likely to find faster baseline performance. Test queries showed that Version 7.0 gains as much as 39% over Version 6.5, depending on server load. In online transaction processing, it processed nearly 15% more transactions than Version 6.5 in the same time period, with similar gains in decision-support system queries.

Bear in mind, however, that as far as improved performance goes, your results may vary; we doubt that many will choose to upgrade to 7.0 based solely on performance.

Features

Microsoft's Data Transformation Services (DTS) provide all the tools necessary to move data in and out of an SQL Server 7.0 database. The DTS Wizard walked us through the entire process, giving us the option to save the DTS package in case we needed to repeat it. It imported an entire file of more than 78,000 records on ZIP code



information in a little more than 71 seconds for our 200-MHz test server. 25 seconds for the 300-MHz desktop and 38 seconds for the 133-MHz laptop.

The DTS Wizard supports direct import/export of Oracle databases as well as Microsoft's Access, Excel and FoxPro; Corel's Paradox; Inprise's dBase; and text files.

You can include scripting code for data operations such as converting fields from one type to another or selecting records based on a particular query. The Web Assistant Wizard pushes data from a SQL 7.0 database to the Web manually, at scheduled intervals or when the data is updated.

Application Development

Microsoft's recently released Visual Studio 6.0 application development platform includes Visual Basic 6.0, Visual C++ 6.0, Visual J++ 6.0, Visual Interdev and Visual FoxPro.

All are closely tied to the SQL Server 7.0 architecture and provide a solid base from which to develop database applications.

We tested Version 7.0's development capabilities by building a connection to the server, loading our ZIP code database with DTS using the visual database tool and then constructing a ZIP code browse/search tool. The project took less than 15 minutes.

We especially liked the ability to make changes to the database from within the Visual Basic environment.

SQL Server 7.0 tools let you build generic database functions such as stored procedures and queries into other applications. Building custom user interfaces and reports requires either Visual Studio or the new Office 2000.

AT A GLANCE

PRODUCT

SQL SERVER 7.0
Microsoft Corp., Redmond, Wash.
www.microsoft.com

PRICE \$1,300 Standard edition with five client access licenses

PROS Improved performance; greatly enhanced wizards to step you through difficult operations

CONS Possible compatibility problems with Cyrix Pentium clones

Administration

We tried every administrative task we could think of through Version 7.0's Enterprise Manager console, including creating and modifying table structures, viewing tables, testing query statements and importing and exporting data. All ran smoothly.

Microsoft has added several wizards to help with tasks such as database maintenance. The Database Maintenance Wizard stepped us through the process of creating a plan for running integrity checks, updating database statistics and performing backups.

Security

Database security in SQL 7.0 works with the Windows NT security system much better than it did in the previous version. Windows NT groups and users are now directly supported in the SQL 7.0 security framework. We also were able to manage all database security directly through the operating system.

SQL Server 7.0 also works in conjunction with Microsoft's Proxy Server to deliver secure database transactions over the Internet. SQL Server 7.0's remote database connectivity features and Proxy Server provide a way to use the Internet to link databases securely.

SQL Server 7.0 works across all the currently supported Microsoft platforms, including Compaq Computer Corp.'s Alpha processor. It supports all of Microsoft's 32-bit operating systems, including Windows 95, Windows 98, Windows NT Server and Windows NT Workstation. However, a few NT-specific features, such as file-level security, multiple processors and disk arrays, don't work on the 95 or 98 platforms. ■

Ferrill is an engineer and freelance writer at Edwards Air Force Base, Calif. He can be reached at pferrill@vernet.com.

Benchmark Data for SQL 6.5 vs. 7.0

Online Transaction Processing

OLTP numbers are measured in transactions per second. The higher the number the better

	6.5	7.0
Light	28.4	39.7
Medium	28.4	42.1
Heavy	28.4	38.7

Distributed System Services

DSS numbers are measured in minutes and seconds. The lower the number the better

	6.5	7.0
Light	18.4	15.8
Medium	18.4	15.8
Heavy	18.4	15.8

Configuration used for testing:

- HP Net Server L7 with four 200-MHz Pentium Pro processors with 512M bytes of RAM and an internal RAID-5 storage unit for the system, page file and applications
- NT 4.0 with SP 4. The data files were built on a 10G-MB array disk with one 750-byte NTFS partition for the data and 25-byte FAT partitions for the logs
- For the test server connectivity, we used four Compaq EMMET PC 12000 models in 100M byte full-duplex mode

The 98 clients were:

- Dell OptiPlex GX1 266-MHz P3 processors with 32M bytes of RAM
- Windows 95 (OSR2)
- Xcelaris Ltd. (Exodus) 18 PCs running in 10M byte full-duplex mode
- The network consisted of two segments of 15 clients and one server per segment using Class 2500 10/100 switches



IBM.

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lets you run multiple Domino servers on the same box, giving you unparalleled reliability.

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BRIEFS

HAHT Offers Web R/3 Software ...

Reinforcing its business around SAP's popular R/3 ERP software, HAHT Software Inc. recently announced e-Scenario for Sales and Distribution. The product, available now, lets customers more easily Web-enable the sales and distribution capabilities within R/3. Pricing starts at \$175,000 for a package that includes five developer environments, licenses for 100 users and 15 days of consulting. In the future, HAHT plans to release Web-enablement tools for other R/3 business functions.

Cabletron Switch Ready for Giga

Cabletron Systems Inc. last week announced a 24-port 100/100M bit/sec LAN switch that can be equipped with Gigabit Ethernet options. Called the SmartStack EL-5100-24T20, it costs \$3,995 (\$750 per port) and is now shipping, according to the company.

The Rochester, N.H.-based vendor is running a promotion until March 1 whereby users get a free Gigabit option. This is the first of the SmartStack EL line that is available with Gigabit options.

... OptiSystems Adds SAP Tools

OptiSystems Solutions Ltd. in Naples, Fla., this month plans to add a database maintenance package to its line of performance monitoring and management software for users of SAP AG's R/3 applications.

The OptiWatch product, the second R/3 tool from the company, begins beta testing next month.

Pricing for the package starts at \$18,750 for a 100-user R/3 system.

Amplify.net Adds IP Tools

Amplify.net Inc. next week will announce three Internet Protocol bandwidth management products: iShuffle, iShuffleRanger and iShuffleRanger.

According to the Fremont, Calif., company, iShuffleRanger, an entry-level bandwidth management module, supports up to 4,000 users. The midrange product iShuffleRanger can support up to 10,000 users, and iShuffleRanger supports 20,000 users on Solaris and 5,000 users on NT. Prices range from \$7,500 to \$30,000. www.amplifynet.com

NetCracker Suite Makes its Debut

NetCracker Technology Co. is shipping NetCracker Professional, a network administration package that was designed to enable companies to design, plan and eliminate data, voice, video and cable networks.

The Watrous, Mass.-based vendor's Professional package runs on Microsoft Corp.'s Windows NT, Windows 95 and 98.

The package costs \$9,995 for a single-user license. www.netcracker.com

Who's Buying What

NFL Properties Inc., the National Football League's licensing, marketing and publishing division, recently selected CIBCO SYSTEMS INC.'s Catalyst 2924M XL 100/100M bit/sec switch to help run its operations in Los Angeles.

WFOURM, a Massachusetts-based Internet service provider that specializes in Web hosting, will co-brand and install Vancouver-based THE ELECTRIC MAIL CO.'s AKA service as the front end to its E-mail outsourcing services.

Your best friend

FRANKLY SPEAKING

IF YOU THOUGHT We were already hip-deep in Y2K-related baloney, better brace yourself. After years of denying that year 2000 will cause any problems for their computer systems, lots of IT people have now realized that almost anything can be blamed on the millennium bug. Suddenly, instead of a threat, Y2K is everybody's best friend. Case in point: Prodigy Communications Corp., which just announced it will shut down Prodigy Classic, its non-Internet online service by October. The official reason? Not a decline in users. Not the uncertain future of a dial-up computer

bulletin board. Nope, Prodigy found the perfect justification: Y2K.

We can't make Prodigy Classic year 2000-compatible, said Prodigy CEO Samer Salameh, so out it goes. Convenient, yes?

Then there's Sun Microsystems boss Scott McNealy, who told an audience last Monday at the World Economic Forum in Davos, Switzerland, that Y2K problems in Asia could shut down supplies of computer parts. "Buy lots of computers in the second half of this year,"

McNealy suggested. He sure sounds rattled by Y2K, eh? Closer to home, check out your own budget, where the Y2K column may have suddenly become a handy place to hide IT expenses. "A lot of people are using Y2K [charges] to do [regular] system maintenance," according to Ian Ratner, an accounting-fraud investigator quoted in February's *Upside* magazine.

Amazing, isn't it? Whether as a whipping boy, a bogeyman or a slush fund, everybody just loves Y2K.

That wasn't possible a year ago. But thanks to Y2K mania in mainstream media, every plumber and playboy knows about the millennium bug now — sort of. Everybody knows Y2K will cause, well, problems.

What problems, exactly? How bad will they be? That, the experts don't agree about. And that in turn makes Y2K a convenient smoke screen for almost anything. Now, this would all be just a sideshow for IT shops, except that it makes real information about

our business partners' Y2K readiness even harder to come by. It was bad enough when suppliers and customers were simply terrified to tell us the whole truth about that monster Y2K. Now they've discovered Y2K is their best buddy — and it's worth its weight in lies. We were all hoping this would get easier. But it won't. There's no

real hope that we'll get any more meaningful information from Y2K surveys or Securities and Exchange Commission filings. We won't get useful clues of year 2000 readiness from press releases or public budget disclosures.

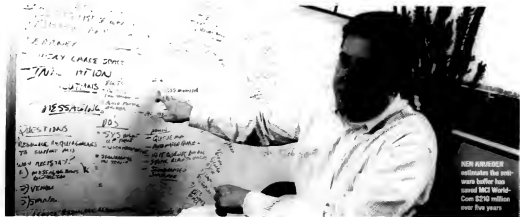
Which means it's back to basics. There's one, and only one, sure way to know if your systems can interoperate with those of your business partners. That is to test — test with real data, test with dummed-up year 2000 data, test in every way you can find.

To make that happen, you'll have to let them test you, too. No excuses, no dodging: The price of knowing where they stand is letting them know where you stand.

So if you're not already in tight with your partners' Y2K teams, start getting chummy — and fast. With the deadline bearing down, you need all the real friends you can get. The only friend you don't need is Y2K. ▀

FRANK HAYES, Computerworld's staff columnist, has made lots of friends covering IT for 20 years. His Internet address is frank_hayes@computerworld.com.





KEN KRUEGER estimates the middleware buffer has saved MCI WorldCom \$210 million over five years.

The Buffer Zone

Like many information technology managers, Ken Krueger has vendors banging down his door to help him link his legacy applications. Because they're trying to build market share, the vendors pile on "tons and tons of features and services," Krueger says. But his employer can't shut down for months while he rips out and replaces existing middleware.

So Krueger, a senior manager at MCI WorldCom Inc., has built what amounts to a software buffer between his core applications and the message-oriented middleware that allows those applications to share data. That buffer, called the MCI Defined Interface Layer, is an application programming interface (API) that sits between the company's applications and its middleware tools, allowing it to easily link new middleware products and new applications.

Krueger recently spoke with Computerworld technology editor Robert L. Scheier about how his API buffer has saved MCI WorldCom money and time.

What led you to that approach? We got into this messaging business [in] 1986. We saw years and years ago that this arena was going to be dynamically changing [because] the vendors' understanding of messaging and message-brokering is constantly changing. Most of the commercial products aren't really completely there yet.

In what way? They offer tons and tons of features and services because they're trying to get market share. What we're looking for is something that solves a specific problem, that can be componentized into our existing infrastructure. No vendor's product is going to give us the be-all or do-all solution.

So what exactly is this buffer you've built? It's an API to the messaging infrastructure, [which is] made up of MQSeries and some of MCI's home-grown messaging products, and also to certain protocols like SNA and TCP/IP. Most of the

WHO IS HE?

Ken Krueger is a senior manager at MCI WorldCom, the Colorado Springs-based communications giant. He built an API that lets MCI WorldCom easily link new middleware products and new applications.

applications that take advantage of the APIs don't know which products we're really [using] under the covers. It could be MQSeries; it could be TCP/IP direct.

Does that buffer layer include any directory services?

We have... a directory implementation — a logical link between the client and the server. It's pretty simple; this is a homegrown directory service we put together ourselves five years ago... based on the X.500 standard.

What happens when an application needs to talk to a new piece of middleware or a product that does, for example, data transformation between applications? [Our applications] would, under our [API], handshake with [the new middleware tool]. Whenever I change something, such as a vendor's product or several vendors' products, and replace it... [or] if I add a function like [data] transformation, we would just build several more layers of complexity within our directory services.

How well has that worked? We've actually migrated from several internal messaging engines... and replaced all that with IBM's MQSeries, without impacting the business at all. If I want to add a [middleware] component, I don't want to impact the business. If I want to strip out MQSeries without impacting the business, I can. If you're connected directly into a vendor's product, and you want to remove that vendor's product from your business, it's a big expense. But if you've got a layer of abstraction... it's saved us a tremendous amount of money.

How does that affect how you look at middleware products? If it isn't componentized, if I can't [just] take advantage of that product's [key feature], then I wouldn't use it. I tend to think of things that solve specific problems — a tool that would solve message transformation; a tool that would offer publish and subscribe [capabilities].

How much has the registry cost to develop and maintain? We've got about 28 people on board right now full time, and about half of that is support. [Editor's note: Krueger declined to give cost estimates.]

And what's been the payoff? [Without it], each one of our applications would have to have their own interface. We estimate [the buffer] saved the business \$210 million over a five-year period.

What would you do differently next time around? Providing better monitoring capabilities; being able to view the infrastructure from the user's perspective. The things that have been most useful to us, we've built ourselves. I know at any point in time pretty quickly when... an application can't communicate between point A and point B.

Scheier's Internet address is robert_scheier@computerworld.com.

Dirt-cheap consumer PCs are luring IT shops—but they might cost you more in the long run
By Deborah Radcliff

BOGUS BARGAIN BOXES?

WHEN JASON FOSTER took over systems development at ASD Catalogs last year, he inherited a mish-mash of more than 200 clone PCs. Since then, he has hassled with inconsistent componentry, poor serviceability and frequent system crashes, all of which take a serious toll on productivity.

"Order fulfillment and payment verification locked up at least once a day," says Foster, director of systems development at the Garland, Texas-based order-fulfillment company, which processes 2,000 orders daily for retail catalog and Web merchandisers. "Anytime developers doing Internet multimedia and high-end database work have to deal with the network, we're locking up three to five times a day."

Next month, Foster will replace the company's 230 PCs and six developer workstations. Should he buy business PCs for upward of \$1,700, loaded with features he won't need? Or should he purchase considerably less expensive consumer PCs?

The plummeting prices of PCs are putting many information technology managers into Foster's shoes. If you multiply the price differential between a typical corporate configuration and a dirt-cheap consumer box by hundreds or thousands of end users, pretty soon you're talking about real money. But shorter product



life cycles, inconsistent component and difficulties in upgrades are common in such machines.

Chris Goodhue, an analyst at Stamford, Conn.-based Gartner Group Inc., has an unequivocal answer for Foster: "Any organization looking to improve manageability and contain total cost of ownership as their business grows should not consider the consumer PC."

Foster is still mulling his options. But he says he worries that in the long run, going with the consumer machines could land him right back where he started.

Strict Diet

Foster and other IT buyers have learned from mistakes made during the early days of client/server, when unwieldy combinations of brand-name and unbranded PCs were common. Nowadays, they're demanding life-cycle standardization so they can swap computers and componentry with-

I don't have to worry about... who's mucking around with type of system.

DAVE KOZLOWSKI,
AMERICAN CREDIT INDEMNITY

out changing the look and feel of the user interfaces.

"I want consistency over time—the same processor, disk drive assemblies, BIOS, memory modules, graphics cards," says Al Hershey, a partner and buyer for the Office of Architecture and Standards at Ernst & Young LLP in New York.

Hershey overcomes the purchase each month of about 2,000 IBM and Dell Computer Corp. desktops and notebooks as part of an ongoing replenishment of the organization's 65,000 computers. He says that four years ago, he haggled with Dell until it agreed to build its business line with standardized components and with Ernst & Young's custom software installed.

Dell and other vendors such as IBM are getting the message. According to Goodhue, such vendors charge a premium on higher-end business computers. In return, they agree to "make fewer, or no, changes that would affect the software image and more consistent components," he says. Without offering any guarantees, Dell tries to stick to standard componentry for 12 to 14 months — and at customer request, may lengthen that time, says Dell spokesman Ken Bissel.

"Does it cost a little more? Yes. But the cost to own the machine is actually much less because my service costs, problem resolution, help desk costs and spare parts are all much lower," Hershey says.

Life-cycle standardization makes repairs a breeze, adds Dave Kozlowski, assistant vice president of technical operations at American Credit Indemnity (ACI), a Baltimore-based business capital insurance agency. He talked Dell in-

to stocking standard components long enough to last through ACI's two-and-a-half-year machine life cycle. "I can stock standard supplies and parts. And I don't have to worry about specialized skills or who's mucking around with what type of system," he says.

Sub-\$1,000 consumer PCs are a different story. Makes usually buy processors, hard drives, modems, sound cards and other components based on availability or cost, not consistency from system to system. Even larger vendors such as Dell, Compaq Computer Corp., Hewlett-Packard Co. and IBM swap components on their consumer lines too often for comfort, Hershey says.

The Dell Dimension consumer line, which ships with the biggest hard drive, fastest video card and other hot new components, is appropriate only for environments that don't require consistency, Bissel says. And because Compaq's consumer Presario and Prosignia lines for small to midsize businesses are built on the latest componentry, "an XYZ graphics card bought today might not be inside our computers in six weeks," says Compaq spokesman Arch Cariddi.

In the case of clones, you won't even recognize the name on many of those components. Name-brand vendors also use non-Intel Corp. processors, such as those from Cyrix Corp. and Advanced Micro Devices Inc., on their consumer lines. That's a concern for some customers. Foster says he believes the use of components from small or lesser-known vendors contributed to the frequent lockups on his consumer PCs.

Late last year, Kozlowski took a good look at consumer PCs when preparing to replace ACI's 300 desktops. He decided against buying consumer machines because he foresaw problems with parts replacement, repairs and upgrades. "If I buy a home-use machine, I may get a better deal. But three months later, the vendor may switch what's on the inside in order to keep pricing as low as possible," he says.

"For another \$1,000, you get a [400-MHz Pentium] that's upgradable," he explains. "For the cheaper machines, you get smaller processors and less memory. What are you going to do with the machine in a

THE GIMMES

Hewlett and Associates LLC pays 70% less for replacement PCs today than it did three years ago. Ernst & Young spends half what it did four years ago for high-end PCs. And they're getting better service, along with four times the speed and hard-disk space.

"We no longer have to buy the highest end to get the functionality we need, either," says Barry White, manager of information systems finances at Hewlett, a Lincolnshire, Ill.-based benefits and actuarial consulting firm.

But as those business machines get cheaper, cost savings across the enterprise don't necessarily follow. Ironically, employees just want more, says Dennis Fishback, COO of the California Independent System Operator, a Folsom, Calif., nonprofit that runs most of the state's power grid.

"As these things get cheaper, people want more of them. Right now, we've got 30% more PCs than we have employees. Everyone wants a new laptop, a bigger or flat screen," Fishback says. "The net effect is there really isn't a bottom-line benefit in the reduction of hardware costs."

- Deborah Radcliff

year? Upgrade? Probably not."

Consumer PCs also are loaded with hardware — sound cards, speakers, CD-ROMS, video cards and modems — that most businesses don't want.

"If you're buying 2,500 PCs for your business, you'll put a premium on componentry and a single software image but less premium on performance or features," Goodhue says.

Suitable for Some

Sometimes, however, strong multimedia capabilities are a must. Consider the needs of a Web development or graphical design shop.

"We've got graphics departments that do video production," Hershey says. "I want to maximize the productivity of those people, so it makes sense to buy a machine with all the fancy multimedia capabilities."

Jay Thornton, sales supervisor at CompuSmart, a Nepean, Ontario, computer store, says half of his consumer PC buyers come from small businesses with fewer than 12 machines.

"It's easier and faster for them to walk into our shop and pick up a couple of \$1,200 PCs and slap some network cards in," he says. Network cards tack only \$85 onto each consumer machine, he says, and the computers are ready that day.

But just adding a network card doesn't necessarily make a computer network-ready.

"There's other things vendors need to do to ensure product readiness for commercial applications: quality assur-

ance, network testing and developing the best service, support and warranty programs," Goodhue says. "This is what business users look for."

Two key reasons ACI decided on Dell's Optiflex business line is a single point of contact for repairs and the product's extended, three-year warranty, which cost \$20 per machine. "It's worth every cent," Kozlowski says.

Most business machines ship with built-in network cards and plug-ins to leading network management consoles such as IBM/Troli, HP OpenView or Computer Associates International Inc.'s Unicenter. "We're not sure we want to go with a consumer PC that's not network-ready [even though] the direction of our systems development effort is browser-based computing, which would run on a fairly limited-client footprint," Foster says.

Not only are IT departments avoiding the temptation of cheaper PCs, they're also pushing vendors to stabilize their business lines, grant longer warranties and provide better service.

"Don't skimp on the hardware. Buy for your business need, not what you can afford," Kozlowski says. "In the long run, if it doesn't crash and you get full production days out of the machine, you've got your money's worth."

Radcliff (derrad@aol.com) is a freelance writer in Northern California.

To the next 20.

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Technology Advances

An IBM/American Airlines joint research team releases a study that becomes the genesis for the **Salvo** computerized airline reservation system.

IBM sells 450 of its 650 magnetic drum calculator, outpacing the 701 Defense Calculator and establishing itself as the first mass producer of computers.

William Shockley, a Nobel Prize winner for developing the transistor, founds Shockley Semiconductor in Palo Alto, Calif. The company brings together the **Fairchild Eight**, the engineers who would go on to create Fairchild Semiconductor and, indirectly, Silicon Valley.

Born in 1954

Susan Kera, legendary Macintosh designer (smiling computer, wristwatch, trash can)

Scott McNealy, CEO of Sun Microsystems

Oran Winfrey

Philip Zimmerman, creator of Pretty Good Privacy

Other Notables

Best Picture: *On the Waterfront*

Number of homes in the U.S. with TVs: 29 million

First TV dinner is introduced: It costs 98 cents and contains turkey, dressing, gravy, peas and sweet potatoes.

Alan Turing, mathematician and artificial intelligence pioneer, commits suicide after being persecuted, and prosecuted, for homosexual acts. (For more on Turing, visit our Web site, www.computerworld.com.)

President Eisenhower commissions Distant Early Warning radars to warn of Soviet attacks

Born of Frustration

BY LESLIE GOFF

SOMETIMES drudgery, rather than necessity, is the mother of invention. John Backus says that's what inspired him to propose developing the first automatic programming language, Fortran, or formula translation. Then 29, the mathematician from Columbia University had spent several years working on IBM's 701 and 704 computers and was simply tired of the complexity of programming.

"It was pure business," Backus, now 74, says of his inspiration. "Writing programs was a big drag — you had to have enormous detail and deal with things you shouldn't have to. So I wanted to make it easier."

Backus had to wing it all the way: There were no studies to support his ideas, no methodologies for developing software, no models for success.

In late 1953, Backus wrote a memo asserting that at least half to three-quarters of the operating costs of a computer were from programming and testing. "The salaries of programmers generally equaled or exceeded the rental [cost] of a computer," Backus says. He reasoned that if he could put together a team that could come up with a language to automate instruction code, it would bring costs down significantly by enabling a computer to perform a repetitive task from a single set of instructions by using loops.

Backus' idea wasn't original. Grace Hopper of Remington Rand's Eckert-Mauchly division had created the A-O compiler, designed to do roughly the same thing. But the compiler "was clumsy and ran slowly and was difficult to use," Backus says. Moreover, IBM's new 704 computer incorporated two new features that would aid Backus' mission — and make it more complex.

Built-in floating-point co-processing and index registers would let the 704 use automatic mathematical statements, which would eliminate the need to write repetitive instruction code. The improvements

meant that the programming technique had to be a lot more clever. Backus says, because "you couldn't mask inefficiencies."

The complexity, coupled with the lackluster response to the A-O compiler's performance, made for skepticism within and outside IBM. But Backus' boss, Cuthbert Hurd, then director of IBM's applied science division, gave him the go-ahead, and in early 1954, the work began.

Backus initially recruited Irving Ziller from within IBM to work with him and later added another IBMer, Harlan Herrick. He says he sought out those with "creativity, a lot of smarts and experience. We had a great variety of people: a physicist, a crystallographer,



John Backus headed up IBM's Fortran development team

an English major."

Sheldon Best, on loan from MIT, wrote a difficult part of the program, Backus says: figuring out how to use index registers. "He would do a flow chart that started out on a piece of paper, and as he would add to it, he just kept gluing pieces of paper together into this whole enormous flow chart," Backus says. "When he went back to MIT, it took months to figure out what it all meant and how it worked."

Roy Nutt, head of the data center at United Aircraft — and later founder of Computer Sciences Corp. — was so enthusiastic about the language that he also joined the gang. "Roy was known to just sit down at a keypunch machine and keypunch in a program that would run. He was responsible for the whole

input-output system in Fortran," Backus recalls. The programmers put in late hours — sometimes sleeping during the day at the Hotel Langdon, across from the IBM building on New York's Madison Avenue, so they could secure computer time at night.

Over two years, the team grew to include some of the best programmers to pass through IBM, Backus says. The summer of 1956 was spent testing the language. IBM shipped the first copies of Fortran to customers in 1957.

Today, 42 years after shipping, Fortran remains a dominant language for military and scientific applications. ■

Goff is a frequent contributor to Computerworld. She can be reached at lgoff@ic.netcom.com.



Hank Aaron hits his first major league home run

U.S. Supreme Court rules against segregation in *Brown vs. The Board of Education of Topeka*

Benjamin O'Davis becomes the first black U.S. Air Force general



Marilyn Monroe and Joe DiMaggio marry



The first television soap opera, *The Secret Storm*, debuts

U.S. detonates a hydrogen bomb at Bikini Atoll. The blast is twice as powerful as expected and 1,000 times more powerful than Hiroshima

Vietnam is divided into North and South

Rosa Parks refuses to move to the back of the bus in Montgomery, Ala.

Client/Server Career Boosters

J. D. Edwards, Oracle, PeopleSoft
top list for demand and money

BY JILL WITIELLO

IMAGINE BEING pursued by technical recruiters the way Mark McGwire is hounded by sports agents. It could happen—especially if you have experience in client/server applications from Oracle Corp., PeopleSoft Inc. or J. D. Edwards & Co. Companies across the U.S. are so eager to snare these experts, they're dangling six-figure deals under a number of noses.

If you've got the skills, all you need to say is: "Show me the money." If you want to get those deals, read on:

ORACLE: "There's enough inside the Oracle world to keep you busy for an entire career," James Rice says.

Rice, now a senior database administrator at Milwaukee-based Manpower Inc., was an applications developer with the U.S. Air Force when he taught himself the skills needed to become an Oracle developer. He used computer-based tutorials, read technology books and tapped into user groups. He learned to be an Oracle database administrator by attending user-group conventions and taking some formal training. He believes the decision to pursue Oracle database administration gave him limitless opportunities.

"My salary increased 20% when I left the military and went to work for a private consulting firm just because I was an Oracle database administrator," Rice says.

After a year and a half at the consulting firm, Rice joined Manpower, the world's largest staffing services firm. Rice now is responsible for keeping the Oracle databases up and running, ensuring data integrity and working with development teams and managers. He's also creating an Oracle career-track training program for Manpower's promising applications programmers. In addition, he heads a major project to roll out Oracle client/server applications to 1,200 offices as the company transitions from Unix-based applications.

Rice offers sound advice for those considering directing their careers toward Oracle development or database administration: "Don't just focus on technology—learn the business," he says. "It's easy to build a database; it's hard to build a database that's usable. If you understand the company's business needs, the database will be usable."

PEOPLESOFT: "Now that we've implemented a big PeopleSoft project in a short time, I've experienced an increase in calls from recruiters," Carla Mills says. Opportunities abound for Mills, director of financial

planning and analysis at American Century Investors Inc. in Kansas City, Mo. But recruiters are likely to get a polite "no thanks" from Mills, who says she prefers the finance side of her job to her information technology responsibilities.

Adds Mills, who has been there eight years: "American Century is a great place to work."

Her colleagues concur: Last year, Mills was in charge of implementing five PeopleSoft applications in nine months. During that time, she didn't lose one member of the implementations team—a rarity in the hot market for PeopleSoft skills. Mills attributes the remarkable retention to the company's decision to "grow their own" PeopleSoft experts.

Mills and her implementation team acquired their PeopleSoft skills in formal training, occasionally traveling out of town to attend classes. The team then trained the IT professionals responsible for running the PeopleSoft applications as well as the functional users in the financial areas of the company.

Mills says the PeopleSoft implementation built strong relationships between the IT and finance functions at the company. PeopleSoft has provided "good career satisfaction" for both the IT and the finance staff, Mills says.

The IT professionals learned to install and manage a popular client/server application. Those in finance use the new tools to help run the business more effectively. But to keep PeopleSoft workers productive,

Mills cautions against working them to the point of burnout.

Upping the Ante

Top client/server skills, ranked according to hiring demand

	ORACLE	PEOPLESOFT	J. D. EDWARDS	SAP	MANPOWER
Oracle	1	17%	24%		
PeopleSoft	2	9%	12%		
J. D. Edwards	3	7%	26%		
SAP	4	17%	24%		
Manpower	5	9%	24%		

SALARY PRESENTED: THE AVERAGE OF EXTENSIVE PAY TO INDIVIDUALS WITH THE SKILLS AS COVERED ELSEWHERE IN THE SAME YEAR.

J. D. EDWARDS: "Working with J. D. Edwards is something totally new and has really added value to my résumé as an IT professional," Becky Drahos says.

"I'm being aggressively pursued by headhunters," says Drahos, application administrator at J. D. Edwards and technology

project manager for the city of Orlando, Fla. Drahos cruiers call, E-mail her and even send contracts—all unsolicited.

"The biggest offer was from a consulting company, which offered me the equivalent of [a] \$180,000 salary. The job requires 100% travel," she says.

Drahos is an experienced IT project manager. She worked at NASA's Kennedy Space Center in Cocoa Beach, Fla. for several years and has worked for the city of Orlando for eight and a half years. She has always been in demand by IT recruiters, but now that she helped manage the first successful implementation by a municipality of J. D. Edwards' One World, she's a red-hot commodity.

Drahos acknowledges that when she began the J. D. Edwards implementation with her team, she had visions of dollar signs dancing in her head. She knew that the experience would boost her IT skills and make her more marketable than ever before.

Yet as she plowed through the 10-month implementation, frequently working until midnight and coming in on weekends, she had a change of heart.

"When a tech-nologist says to me, 'Oh, you wouldn't understand,' I tell them: 'Try me!'"

CARLA MILLS,
AMERICAN CENTURY

"[This] is something totally new and has added value to my résumé as an IT professional."

BECKY DRAHOS,
CITY OF ORLANDO, FLA.

"During those [user-group] events, I would soak up as much information as I could."

JAMES RICE,
MANPOWER INC.

"My family is more valuable than money," Drahos says. "I can't be with them much if I'm flying off somewhere every Sunday and returning Friday night."

The city of Orlando implemented all the financial modules of J. D. Edwards' One World last year and will add several more this year. One of the biggest changes of the implementation was that boundaries between the Technology Management department and the finance area blurred as people worked together to customize the application.

Drahos' best advice is to secure top management's support and to encourage teamwork from everyone affected by the client/server application. ▀

Vitiello is a freelance writer in East Brunswick, N.J.



SAP PROFESSIONALS



IT'S ALWAYS EASY TO SPOT THE SPEARHEAD CONSULTANT

They're the ones whose careers have shifted into overdrive. Spearhead, one of today's fastest-growing SAP[®] National Implementation Partners, hires only the hottest and most experienced SAP consultants in the business and compensates them accordingly. For example: Project Managers—\$180K+ Expert Consultants—\$180K+ Team Leaders, Sr. Consultants—\$150K+ Consultants—\$120K+ Spearhead supplements these compensation levels with high-performance incentives and a comprehensive benefits package. If you can pass the following road test, we want to talk.

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SAP, ALE, Basis and ABAP4

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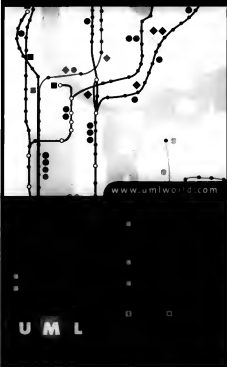
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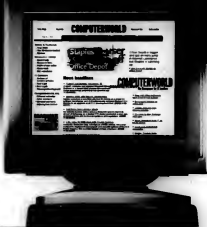
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101

PERCENT		PERCENT	
Memorex Graphics (HD)	-24.9	Tech Data (LJ)	-27.8
Auspex Systems (HD)	-23.3	3Com Corp.	-25.7
Realtime Worldwise	-17.8	Advanced Micro Devices	-16.5
Plasma	-16.3	ECI Telecom (IS)	-15.8
PSINet (HI)	-15.9	Macromedia Inc.	-15.3
Saligard Scientifics	-15.4	The Venture Corp.	-14.2
Anne (HI)	-12.0	Excite Inc. (HI)	-11.0
Pictet	-10.9	Documentum	-10.2
DOLLAR		DOLLAR	
Fluor	-6.9	Excite Inc. (HI)	-18.00
Saligard Scientifics	-5.84	(H)Fluor Corp. (HD)	-13.76
PSINet (HI)	-5.25	3Com Corp.	-12.10
Bell Computer Corp. (HI)	-5.00	Nokia Corp.	-11.31
Gateway 2000 Inc. (HI)	-3.76	IBM	-10.30
Karman Kodak Co.	-3.60	Microsoft Corp. (HD)	-10.20
Oracle Corp. (HI)	-3.50	EMC (HI)	-9.30
Computer Sciences	-3.33	Soletron Corp.	-8.83

HIGH-TECH OK FOR LONG TERM

But fund-trackers say sector is too risky for core holding

TECHNOLOGY-BASED mutual funds have far outpaced the average stock fund for the past several months. But investors take heed: Fund-trackers recommend commitments of at least five years and warn that like all bubbles, this one eventually will burst—or at least lose some air.

The average science and technology fund returned 71.9% for the 12 months ended Jan. 31, compared with 75.6% for the average U.S. diversified stock fund, or general equity fund, according to Lipper Inc., a New York firm that follows the mutual funds market.

Returns can be as impressive. But investors discouraged by the relatively lachrymose performance of their diversified mutual funds should be wary of jumping on the high-tech bandwagon, says Christine Benz, an equity-fund analyst at Morningstar Inc. in Chicago.

"Certainly it's a good sector to be in for the long-term, but I'd hate to see someone take some assets out of a core holding and put them into technology

funds," Benz says. "It's just too risky... because with technology having had such a strong run, the law of averages makes it less likely that it will continue to do well."

Benz adds that most investors could get all the exposure they need through a diversified growth fund with about 30% of its assets in technology stocks.

But if you're prepared for the risks and ready to hold on to the funds for several years, then pure technology is certainly an area worth looking at, says Michael Murphy, editor of the "California Technology Stock Letter" and author of *Every Investor's Guide to High-Tech Stocks and Mutual Funds*.

Benz and Murphy both recommend starting with tech funds that have proven track records.

Three funds they say fit the bill are those from T. Rowe Price Investment Services Inc. in Baltimore, Alliance Capital Management LP in New York and Denver-based Invesco Funds Group (see chart).

For the year ended Dec. 31, for example, the Alliance technology fund's average annual total return was 63.14%, its five-year return was 30.71%. T. Rowe Price's tech fund posted a 42.35% return for calendar 1998 and a five-year return of 24.39%. —Tom Diederich

FUND NAME			
12-MONTH RETURN			
5-YEAR RETURN			
Alliance Capital Management LP	63.14%	30.71%	
T. Rowe Price Investment Services Inc.	42.35%	24.39%	
Invesco Funds Group	30.12%	21.49%	

PERCENT		PERCENT	
Microsoft Corp. (HD)	1.1	Microsoft Corp. (HD)	1.1
IBM	0.8	IBM	0.8
Oracle Corp. (HI)	0.7	Oracle Corp. (HI)	0.7
Microsoft Corp. (HD)	0.6	Microsoft Corp. (HD)	0.6
IBM	0.5	IBM	0.5
Oracle Corp. (HI)	0.4	Oracle Corp. (HI)	0.4
Microsoft Corp. (HD)	0.3	Microsoft Corp. (HD)	0.3
IBM	0.2	IBM	0.2
Oracle Corp. (HI)	0.1	Oracle Corp. (HI)	0.1
Microsoft Corp. (HD)	0.0	Microsoft Corp. (HD)	0.0
IBM	-0.1	IBM	-0.1
Oracle Corp. (HI)	-0.2	Oracle Corp. (HI)	-0.2
Microsoft Corp. (HD)	-0.3	Microsoft Corp. (HD)	-0.3
IBM	-0.4	IBM	-0.4
Oracle Corp. (HI)	-0.5	Oracle Corp. (HI)	-0.5
Microsoft Corp. (HD)	-0.6	Microsoft Corp. (HD)	-0.6
IBM	-0.7	IBM	-0.7
Oracle Corp. (HI)	-0.8	Oracle Corp. (HI)	-0.8
Microsoft Corp. (HD)	-0.9	Microsoft Corp. (HD)	-0.9
IBM	-1.0	IBM	-1.0
Oracle Corp. (HI)	-1.1	Oracle Corp. (HI)	-1.1
Microsoft Corp. (HD)	-1.2	Microsoft Corp. (HD)	-1.2
IBM	-1.3	IBM	-1.3
Oracle Corp. (HI)	-1.4	Oracle Corp. (HI)	-1.4
Microsoft Corp. (HD)	-1.5	Microsoft Corp. (HD)	-1.5
IBM	-1.6	IBM	-1.6
Oracle Corp. (HI)	-1.7	Oracle Corp. (HI)	-1.7
Microsoft Corp. (HD)	-1.8	Microsoft Corp. (HD)	-1.8
IBM	-1.9	IBM	-1.9
Oracle Corp. (HI)	-2.0	Oracle Corp. (HI)	-2.0
Microsoft Corp. (HD)	-2.1	Microsoft Corp. (HD)	-2.1
IBM	-2.2	IBM	-2.2
Oracle Corp. (HI)	-2.3	Oracle Corp. (HI)	-2.3
Microsoft Corp. (HD)	-2.4	Microsoft Corp. (HD)	-2.4
IBM	-2.5	IBM	-2.5
Oracle Corp. (HI)	-2.6	Oracle Corp. (HI)	-2.6
Microsoft Corp. (HD)	-2.7	Microsoft Corp. (HD)	-2.7
IBM	-2.8	IBM	-2.8
Oracle Corp. (HI)	-2.9	Oracle Corp. (HI)	-2.9
Microsoft Corp. (HD)	-3.0	Microsoft Corp. (HD)	-3.0
IBM	-3.1	IBM	-3.1
Oracle Corp. (HI)	-3.2	Oracle Corp. (HI)	-3.2
Microsoft Corp. (HD)	-3.3	Microsoft Corp. (HD)	-3.3
IBM	-3.4	IBM	-3.4
Oracle Corp. (HI)	-3.5	Oracle Corp. (HI)	-3.5
Microsoft Corp. (HD)	-3.6	Microsoft Corp. (HD)	-3.6
IBM	-3.7	IBM	-3.7
Oracle Corp. (HI)	-3.8	Oracle Corp. (HI)	-3.8
Microsoft Corp. (HD)	-3.9	Microsoft Corp. (HD)	-3.9
IBM	-4.0	IBM	-4.0
Oracle Corp. (HI)	-4.1	Oracle Corp. (HI)	-4.1
Microsoft Corp. (HD)	-4.2	Microsoft Corp. (HD)	-4.2
IBM	-4.3	IBM	-4.3
Oracle Corp. (HI)	-4.4	Oracle Corp. (HI)	-4.4
Microsoft Corp. (HD)	-4.5	Microsoft Corp. (HD)	-4.5
IBM	-4.6	IBM	-4.6
Oracle Corp. (HI)	-4.7	Oracle Corp. (HI)	-4.7
Microsoft Corp. (HD)	-4.8	Microsoft Corp. (HD)	-4.8
IBM	-4.9	IBM	-4.9
Oracle Corp. (HI)	-5.0	Oracle Corp. (HI)	-5.0
Microsoft Corp. (HD)	-5.1	Microsoft Corp. (HD)	-5.1
IBM	-5.2	IBM	-5.2
Oracle Corp. (HI)	-5.3	Oracle Corp. (HI)	-5.3
Microsoft Corp. (HD)	-5.4	Microsoft Corp. (HD)	-5.4
IBM	-5.5	IBM	-5.5
Oracle Corp. (HI)	-5.6	Oracle Corp. (HI)	-5.6
Microsoft Corp. (HD)	-5.7	Microsoft Corp. (HD)	-5.7
IBM	-5.8	IBM	-5.8
Oracle Corp. (HI)	-5.9	Oracle Corp. (HI)	-5.9
Microsoft Corp. (HD)	-6.0	Microsoft Corp. (HD)	-6.0
IBM	-6.1	IBM	-6.1
Oracle Corp. (HI)	-6.2	Oracle Corp. (HI)	-6.2
Microsoft Corp. (HD)	-6.3	Microsoft Corp. (HD)	-6.3
IBM	-6.4	IBM	-6.4
Oracle Corp. (HI)	-6.5	Oracle Corp. (HI)	-6.5
Microsoft Corp. (HD)	-6.6	Microsoft Corp. (HD)	-6.6
IBM	-6.7	IBM	-6.7
Oracle Corp. (HI)	-6.8	Oracle Corp. (HI)	-6.8
Microsoft Corp. (HD)	-6.9	Microsoft Corp. (HD)	-6.9
IBM	-7.0	IBM	-7.0
Oracle Corp. (HI)	-7.1	Oracle Corp. (HI)	-7.1
Microsoft Corp. (HD)	-7.2	Microsoft Corp. (HD)	-7.2
IBM	-7.3	IBM	-7.3
Oracle Corp. (HI)	-7.4	Oracle Corp. (HI)	-7.4
Microsoft Corp. (HD)	-7.5	Microsoft Corp. (HD)	-7.5
IBM	-7.6	IBM	-7.6
Oracle Corp. (HI)	-7.7	Oracle Corp. (HI)	-7.7
Microsoft Corp. (HD)	-7.8	Microsoft Corp. (HD)	-7.8
IBM	-7.9	IBM	-7.9
Oracle Corp. (HI)	-8.0	Oracle Corp. (HI)	-8.0
Microsoft Corp. (HD)	-8.1	Microsoft Corp. (HD)	-8.1
IBM	-8.2	IBM	-8.2
Oracle Corp. (HI)	-8.3	Oracle Corp. (HI)	-8.3
Microsoft Corp. (HD)	-8.4	Microsoft Corp. (HD)	-8.4
IBM	-8.5	IBM	-8.5
Oracle Corp. (HI)	-8.6	Oracle Corp. (HI)	-8.6
Microsoft Corp. (HD)	-8.7	Microsoft Corp. (HD)	-8.7
IBM	-8.8	IBM	-8.8
Oracle Corp. (HI)	-8.9	Oracle Corp. (HI)	-8.9
Microsoft Corp. (HD)	-9.0	Microsoft Corp. (HD)	-9.0
IBM	-9.1	IBM	-9.1
Oracle Corp. (HI)	-9.2	Oracle Corp. (HI)	-9.2
Microsoft Corp. (HD)	-9.3	Microsoft Corp. (HD)	-9.3
IBM	-9.4	IBM	-9.4
Oracle Corp. (HI)	-9.5	Oracle Corp. (HI)	-9.5
Microsoft Corp. (HD)	-9.6	Microsoft Corp. (HD)	-9.6
IBM	-9.7	IBM	-9.7
Oracle Corp. (HI)	-9.8	Oracle Corp. (HI)	-9.8
Microsoft Corp. (HD)	-9.9	Microsoft Corp. (HD)	-9.9
IBM	-10.0	IBM	-10.0
Oracle Corp. (HI)	-10.1	Oracle Corp. (HI)	-10.1
Microsoft Corp. (HD)	-10.2	Microsoft Corp. (HD)	-10.2
IBM	-10.3	IBM	-10.3
Oracle Corp. (HI)	-10.4	Oracle Corp. (HI)	-10.4
Microsoft Corp. (HD)	-10.5	Microsoft Corp. (HD)	-10.5
IBM	-10.6	IBM	-10.6
Oracle Corp. (HI)	-10.7	Oracle Corp. (HI)	-10.7
Microsoft Corp. (HD)	-10.8	Microsoft Corp. (HD)	-10.8
IBM	-10.9	IBM	-10.9
Oracle Corp. (HI)	-11.0	Oracle Corp. (HI)	-11.0
Microsoft Corp. (HD)	-11.1	Microsoft Corp. (HD)	-11.1
IBM	-11.2	IBM	-11.2
Oracle Corp. (HI)	-11.3	Oracle Corp. (HI)	-11.3
Microsoft Corp. (HD)	-11.4	Microsoft Corp. (HD)	-11.4
IBM	-11.5	IBM	-11.5
Oracle Corp. (HI)	-11.6	Oracle Corp. (HI)	-11.6
Microsoft Corp. (HD)	-11.7	Microsoft Corp. (HD)	-11.7
IBM	-11.8	IBM	-11.8
Oracle Corp. (HI)	-11.9	Oracle Corp. (HI)	-11.9
Microsoft Corp. (HD)	-12.0	Microsoft Corp. (HD)	-12.0
IBM	-12.1	IBM	-12.1
Oracle Corp. (HI)	-12.2	Oracle Corp. (HI)	-12.2
Microsoft Corp. (HD)	-12.3	Microsoft Corp. (HD)	-12.3
IBM	-12.4	IBM	-12.4
Oracle Corp. (HI)	-12.5	Oracle Corp. (HI)	-12.5
Microsoft Corp. (HD)	-12.6	Microsoft Corp. (HD)	-12.6
IBM	-12.7	IBM	-12.7
Oracle Corp. (HI)	-12.8	Oracle Corp. (HI)	-12.8
Microsoft Corp. (HD)	-12.9	Microsoft Corp. (HD)	-12.9
IBM	-13.0	IBM	-13.0
Oracle Corp. (HI)	-13.1	Oracle Corp. (HI)	-13.1
Microsoft Corp. (HD)	-13.2	Microsoft Corp. (HD)	-13.2
IBM	-13.3	IBM	-13.3
Oracle Corp. (HI)	-13.4	Oracle Corp. (HI)	-13.4
Microsoft Corp. (HD)	-13.5	Microsoft Corp. (HD)	-13.5
IBM	-13.6	IBM	-13.6
Oracle Corp. (HI)	-13.7	Oracle Corp. (HI)	-13.7
Microsoft Corp. (HD)	-13.8	Microsoft Corp. (HD)	-13.8
IBM	-13.9	IBM	-13.9
Oracle Corp. (HI)	-14.0	Oracle Corp. (HI)	-14.0
Microsoft Corp. (HD)	-14.1	Microsoft Corp. (HD)	-14.1
IBM	-14.2	IBM	-14.2
Oracle Corp. (HI)	-14.3	Oracle Corp. (HI)	-14.3
Microsoft Corp. (HD)	-14.4	Microsoft Corp. (HD)	-14.4
IBM	-14.5	IBM	-14.5
Oracle Corp. (HI)	-14.6	Oracle Corp. (HI)	-14.6
Microsoft Corp. (HD)	-14.7	Microsoft Corp. (HD)	-14.7
IBM	-14.8	IBM	-14.8
Oracle Corp. (HI)	-14.9	Oracle Corp. (HI)	-14.9
Microsoft Corp. (HD)	-15.0	Microsoft Corp. (HD)	-15.0
IBM	-15.1	IBM	-15.1
Oracle Corp. (HI)	-15.2	Oracle Corp. (HI)	-15.2
Microsoft Corp. (HD)	-15.3	Microsoft Corp. (HD)	-15.3
IBM	-15.4	IBM	-15.4
Oracle Corp. (HI)	-15.5	Oracle Corp. (HI)	-15.5
Microsoft Corp. (HD)	-15.6	Microsoft Corp. (HD)	-15.6
IBM	-15.7	IBM	-15.7
Oracle Corp. (HI)	-15.8	Oracle Corp. (HI)	-15.8
Microsoft Corp. (HD)	-15.9	Microsoft Corp. (HD)	-15.9
IBM	-16.0	IBM	-16.0
Oracle Corp. (HI)	-16.1	Oracle Corp. (HI)	-16.1
Microsoft Corp. (HD)	-16.2	Microsoft Corp. (HD)	-16.2
IBM	-16.3	IBM	-16.3
Oracle Corp. (HI)	-16.4	Oracle Corp. (HI)	-16.4
Microsoft Corp. (HD)	-16.5	Microsoft Corp. (HD)	-16.5
IBM	-16.6	IBM	-16.6
Oracle Corp. (HI)	-16.7	Oracle Corp. (HI)	-16.7
Microsoft Corp. (HD)	-16.8	Microsoft Corp. (HD)	-16.8
IBM	-16.9	IBM	-16.9
Oracle Corp. (HI)	-17.0	Oracle Corp. (HI)	-17.0
Microsoft Corp. (HD)	-17.1	Microsoft Corp. (HD)	-17.1
IBM	-17.2	IBM	-17.2
Oracle Corp. (HI)	-17.3	Oracle Corp. (HI)	-17.3
Microsoft Corp. (HD)	-17.4	Microsoft Corp. (HD)	-17.4
IBM	-17.5	IBM	-17.5
Oracle Corp. (HI)	-17.6	Oracle Corp. (HI)	-17.6
Microsoft Corp. (HD)	-17.7	Microsoft Corp. (HD)	-17.7
IBM	-17.8	IBM	-17.8
Oracle Corp. (HI)	-17.9	Oracle Corp. (HI)	-17.9
Microsoft Corp. (HD)	-18.0	Microsoft Corp. (HD)	-18.0
IBM	-18.1	IBM	-18.1
Oracle Corp. (HI)	-18.2	Oracle Corp. (HI)	-18.2
Microsoft Corp. (HD)	-18.3	Microsoft Corp. (HD)	-18.3
IBM	-18.4	IBM	-18.4
Oracle Corp. (HI)	-18.5	Oracle Corp. (HI)	-18.5
Microsoft Corp. (HD)	-18.6	Microsoft Corp. (HD)	-18.6
IBM	-18.7	IBM	-18.7
Oracle Corp. (HI)	-18.8	Oracle Corp. (HI)	-18.8
Microsoft Corp. (HD)	-18.9	Microsoft Corp. (HD)	-18.9
IBM	-19.0	IBM	-19.0
Oracle Corp. (HI)	-19.1	Oracle Corp. (HI)	-19.1
Microsoft Corp. (HD)	-19.2	Microsoft Corp. (HD)	-19.2
IBM	-19.3	IBM	-19.3
Oracle Corp. (HI)	-19.4	Oracle Corp. (HI)	-19.4
Microsoft Corp. (HD)	-19.5	Microsoft Corp. (HD)	-19.5
IBM	-19.6	IBM	-19.6
Oracle Corp. (HI)	-19.7	Oracle Corp. (HI)	-19.7
Microsoft Corp. (HD)	-19.8	Microsoft Corp. (HD)	-19.8
IBM	-19.9	IBM	-19.9
Oracle Corp. (HI)	-20.0	Oracle Corp. (HI)	-20.0

PERCENT		PERCENT	
Microsoft Corp. (HD)	1.1	Microsoft Corp. (HD)	1.1
IBM	0.8	IBM	0.8
Oracle Corp. (HI)	0.7	Oracle Corp. (HI)	0.7
Microsoft Corp. (HD)	0.6	Microsoft Corp. (HD)	0.6
IBM	0.5	IBM	0.5
Oracle Corp. (HI)	0.4	Oracle Corp. (HI)	0.4
Microsoft Corp. (HD)	0.3	Microsoft Corp. (HD)	0.3
IBM	0.2	IBM	0.2
Oracle Corp. (HI)	0.1	Oracle Corp. (HI)	0.1
Microsoft Corp. (HD)	0.0	Microsoft Corp. (HD)	0.0
IBM	-0.1	IBM	-0.1
Oracle Corp. (HI)	-0.2	Oracle Corp. (HI)	-0.2
Microsoft Corp. (HD)	-0.3	Microsoft Corp. (HD)	-0.3
IBM	-0.4	IBM	-0.4
Oracle Corp. (HI)	-0.5	Oracle Corp. (HI)	-0.5
Microsoft Corp. (HD)	-0.6	Microsoft Corp. (HD)	-0.6
IBM	-0.7	IBM	-0.7
Oracle Corp. (HI)	-0.8	Oracle Corp. (HI)	-0.8
Microsoft Corp. (HD)	-0.9	Microsoft Corp. (HD)	-0.9
IBM	-1.0	IBM	-1.0
Oracle Corp. (HI)	-1.1	Oracle Corp. (HI)	-1.1
Microsoft Corp. (HD)	-1.2	Microsoft Corp. (HD)	-1.2
IBM	-1.3	IBM	-1.3
Oracle Corp. (HI)	-1.4	Oracle Corp. (HI)	-1.4
Microsoft Corp. (HD)	-1.5	Microsoft Corp. (HD)	-1.5
IBM	-1.6	IBM	-1.6
Oracle Corp. (HI)	-1.7	Oracle Corp. (HI)	-1.7
Microsoft Corp. (HD)	-1.8	Microsoft Corp. (HD)	-1.8
IBM	-1.9	IBM	-1.9
Oracle Corp. (HI)	-2.0	Oracle Corp. (HI)	-2.0
Microsoft Corp. (HD)	-2.1	Microsoft Corp. (HD)	-2.1
IBM	-2.2	IBM	-2.2
Oracle Corp. (HI)	-2.3	Oracle Corp. (HI)	-2.3
Microsoft Corp. (HD)	-2.4	Microsoft Corp. (HD)	-2.4
IBM	-2.5	IBM	-2.5
Oracle Corp. (HI)	-2.6	Oracle Corp. (HI)	-2.6
Microsoft Corp. (HD)	-2.7	Microsoft Corp. (HD)	-2.7
IBM	-2.8	IBM	-2.8
Oracle Corp. (HI)	-2.9	Oracle Corp. (HI)	-2.9
Microsoft Corp. (HD)	-3.0	Microsoft Corp. (HD)	-3.

Hall of Fame

Who are the top people in information technology in the past millennium? Here's the list from the authors of the book 1,000 Years, 1,000 People: Ranking the Men and Women Who Shaped the Millennium (Kodansha International, 1998):

J. PERSPER ECKERT (No. 76 in the list of 1,000), designer of the pioneering ENIAC computer

BLAISE PASCAL (No. 144), designer of the first calculating machine

GEORGE BOOLE (No. 147), inventor of Boolean logic

CHARLES BABBAGE (No. 351), designer of the first (mechanical) computer

ALAN TURING (No. 445), founder of computer science

Others: Steve Munkacsy (763), Seymour Cray (765), Robert Noyce (730), John von Neumann (565) and Ada Lovelace (1960). (But Gates didn't make the cut because he was viewed as a marketing hystion, not an inventor or technical whiz.)

DEATH AND TAXES

About 15,000 city employees in Dallas, got a rude shock when their W-2 tax forms arrived last month. The box marked "deceased" was checked. The snafu happened because the 1998 form puts the "deceased" box where the "person" box was on the 1997 W-2. Dallas had failed to upgrade its W-2-printing software. The IRS says it can't warn because it uses computerized data furnished by employers — not the paper forms — when processing tax returns.

HOW STANDARDS

REALLY GET SET John Thomas, vice president of operations at Orem, Utah-based Viewpoint Databases, says he'd rather have a handheld computer with a keyboard. But five co-workers told him he had to buy a Palm III or he couldn't share information with them. Someone had laboriously keyed a company directory into his Palm, and it thus became the standard platform. "I decided if I'm getting something else, I'm holed," Thomas said.

INSIDE LINES

RUMOR WILL

March or April. That's the current word on when the next beta version of Windows 2000 will hit the streets. . . . Anyway is reportedly working on a major e-commerce project that will sell products both to the public and the company's own distributors. It's set to go live Sept. 1.

OVERHEARD

Edward J. Black, president of the Computer & Communications Industry Association, on competition for Windows. "Saying that Linux is a competitive threat to Microsoft Windows is like saying that Cuba is capable of overpowering the U.S." . . . An anonymous Arthur Andersen employee, on the company's new tactic of giving away a Palm III as a door prize for corporate meetings. "You will see actual partners come to these meetings that have nothing to do with them."

PUMBER'S HELPER

Some inside Linux leaders objected that our Overheard quote last week from author Clifford Stoll was, in borrowed from leadership guru

and Common Cause leader John W. Gardner. You decide. What Stoll said: "I've let only the idiots and dodos believe plumbings then neither our programs nor our pipes are going to hold much water." What Gardner said: "The society which seems excellence in plumbing because plumbing is a humble activity and interests shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

DIVINE INTERVENTION

The Philadelphia Inquirer reports that several Pennsylvania churches organized V28 prayer gatherings last week. No, they're not worried about the apocalypse; they're praying that officials deal promptly with the bug, that truthfulness will reign and that the elderly won't be abandoned in the event of widespread panic. How these things could take a miracle. News editor Patricia Kaele is praying you'll send news tips and hints her way. E-mail her at patrick_kaele@computerworld.com or call (508) 820-8883.

WHERE'S WALDO? HIDING IN A SILICON CHIP

YOU KNOW about Easter eggs, those witty little novelties that programmers sneak into their programs. But designers of semiconductor chips have their own little game, hiding cartoon characters in nooks and crannies of the chip. It takes a high-powered optical microscope and a painstaking search of the chip to find them, says Michael W. Davidson, a researcher at Florida State University in Tallahassee. For



example, the wire-frame rendition of Waldo found in one chip is 30 microns in size — you could fit three of those in the width of a human hair (The images here are magnified about 1,000 times). Davidson's Silicon Zoo Gallery on the Web (<http://micro.magnet.fsu.edu>) features many other designs hidden in microchips, including Road Runner, Daffy Duck, Groucho Marx, a buffalo herd, Godzilla and a guitar-strumming Tyrannosaurus rex.



Photo: Steve Munkacsy (763), Seymour Cray (765), Robert Noyce (730), John von Neumann (565) and Ada Lovelace (1960). (But Gates didn't make the cut because he was viewed as a marketing hystion, not an inventor or technical whiz.)

The 5th Wave



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AGENDA

9-12:00 BUSINESS SESSION

- **Introduction and Welcome** Vicki J. Brown — Senior Vice President, Worldwide Operations and Marketing
- **Business in a Telephony-Driven IT Land Upright?** Philippe de Marcellis — Senior Vice President, Global Research
- **Survival Tactics for The New Internet Economy** Frank Gens — Senior Vice President, Internet Research
- **Can Today's IT Leaders Compete in the New Internet Economy?** David P. Vellante — Senior Vice President, Systems, Software, Storage, Semiconductor, Channels, and User Research
- **Mobile and Flying Technologies for the New Economy** John Gantz — Senior Vice President, Personal Systems, Services, and Collaborative Research

Session A 1:05-1:45	Session B 1:55-2:35	Session C 2:45-3:25	Session D 3:35-4:10
Track 1: Internet Commerce: Driving the New Economy			
What's the IRI for Internet Commerce? Michael J. Jones, Tractor	The New Internet Commerce David J. Reardon, Commerce One	Developing the New Internet Commerce David J. Reardon, Commerce One	Protect-Share Commerce against the World All guests
Track 2: Devices for the New Economy			
The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	Devices for the New Economy Greg Amico
Track 3: Systems and Servers in the New Economy			
Server Workloads: Growing and Changing David J. Reardon, Tractor	Server Workloads: Growing and Changing David J. Reardon, Tractor	Server Workloads: Growing and Changing David J. Reardon, Tractor	Server Workloads: Growing and Changing David J. Reardon, Tractor
Track 4: Services in the New Economy			
Opportunities in the New Economy David J. Reardon, Tractor	Opportunities in the New Economy David J. Reardon, Tractor	Opportunities in the New Economy David J. Reardon, Tractor	Opportunities in the New Economy David J. Reardon, Tractor
Track 5: Software Engines for the New Economy			
The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor
Track 6: Building the New Economy			
The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor	The New Internet: PC David J. Reardon, Tractor

2:15-2:30 Closing Session

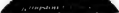
- **Next Generation Information** Dr. Robert M. Metcalfe — Vice President, Technology, IDC

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